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Unpublished Documents on the Baths of Agrippa.

LAST week we drew attention to the publication by Baron de Geymüller of facsimiles of the original architectural sketches and studies of Leonardo da Vinci. From the same author we have the small but interesting publication, the general subject of which is indicated above.* The work includes also some details and sketches relative to the Pantheon, which of course, strictly speaking, is included in the subject of the Baths of Agrippa, to which it was the entrance-hall, and also some old sketches of portions of the Baths of Diocletian.

It was during the winter of 1881-82 that the author was engaged in examining, at the Uffizi at Florence, the various original drawings and sketches by Italian architects which are preserved there, and in turning over a portfolio of drawings by Baldassare Peruzzi, his eye fell on the words "Therme Agrippine," scrawled in a red-ink autograph, of which he gives a facsimile, on a large sheet containing no other drawing or writing except the words "Per il conte di Pitigliano," in Peruzzi's hand. The portfolio apparently, however, contained only some plans of a palace for the Count Pitigliano, and Baron de Geymüller began to think the words "Therme Agrippine" were an accidental scribble meaning nothing, when he lighted on a part of a plan drawn lightly in red ink, whereon he saw an *exedra* partly supported on four columns arranged on a segment of a circle, in the manner so common, in one form or another, in the plans of the Roman Baths. Examining this further he found some of the lines of the plan coincided with those of the projected plan of Count Pitigliano's palace, and it flashed upon him that the palace was to be built on part of the site of the Thermæ; and the comparison of the sketch plan of the palace, of which a facsimile is given, leaves no manner of doubt that this was the case. The portion of the plan of the baths included in the red-ink sketch is rather more than half of the central buildings on the axis of the Pantheon, and at the opposite end from the Pantheon. The circular and, apparently, domed hall, indicated as a probability in this portion of Canina's restoration of the plan, is drawn here distinctly in the red-ink plan, and is adapted as a special feature in the plan of this portion of the projected palace, which was, in fact, evidently intended to be built in part on the very walls of the ancient baths. In this circular hall is shown an internal circular colonnade of coupled columns, which would, no doubt, have carried the drum of the cupola.

In regard to the real interest of this drawing, the important question arose, did Peruzzi, in his red-ink outline (the walls are only outlined, and not shaded up) intend to represent what was actually existing of the baths at that time, or was he partly making a drawing of the actual remains, and partly trying upon it here and there the lines of the proposed new structure? Of course, in the former case the value of the red-ink plan is made greater, as an archæological record, than in the latter. In the completed plan of this portion of the palace parts of the walls are shaded in bistre, and parts, to quote the author's words, "foncées d'une couleur lie de vin." These latter portions are evidently intended to distinguish those portions of Peruzzi's new plan, in which he intended to make use of the old remains of the baths; there can be no doubt of this on comparing the two. But are all the columns shown on the red-ink plan representations of columns existing in Peruzzi's time? If so, we now know positively that at the opposite end of the baths from the Pantheon there was a circular hall with an interior colonnade. Baron de Geymüller regards the columns, however, as doubtful, because three of them in another part of the plan do not seem as if they would unite properly with the adjacent portions if the plan were completed; and regards them as only a tentative suggestion for the new work, put on the plan of the old. We may observe, however, that on the plan of the palace these columns are coloured in the same way with the rest of the old work, which was to be incorporated in the new. Then in the palace plan Peruzzi shows in the circular hall the internal colonnade of coupled columns on one side of the plan only, the other side showing an alternative arrangement of solid piers with two pilasters and a niche between. Baron de Geymüller's argument is, if Peruzzi was utilising as much as he could of the old work, would he have proposed this alternative design of piers and pilasters if the colonnade had been still standing? We see no reason why he should not. It would have been a matter of casing the columns, the outlines of which are in fact shown on the palace plan, within the new piers; and one reason for doing this, as the author himself suggests, might have been to give scope for the use of coloured marbles in the new building; besides, of course, that the columns, though *in situ*, may have been too much damaged to be retained in their then condition. The *exedra* which first attracted the author's attention to the drawings is merely shown in line on the palace plan, in the same position as on the red-ink plan, but not adopted in any way in the new building. We can hardly believe, however, that it would have been inserted by Peruzzi except from actual fact, though it probably did not conveniently suit the new plan.

In brief, our impression is, from our study of the facsimiles published by Baron de Geymüller, that he has been more sceptical than he need have been; though that is a fault in an archæological student as admirable as it is rare. The comparison of the two plans leads us to the conclusion that what Peruzzi put down in red ink were facts obvious in the plan of the baths as existing in his day, as we cannot otherwise see any sufficient reason for their appearing on the red-ink sketch at all. This is especially the case in regard to the aforesaid *exedra*, as this was not any part of the Pitigliano Palace plan, and can only have been put on the drawings because it was there in fact, or sufficient remains of it: and as it is shown in just the same way as the older columnar features on the red-ink plan, this would lead to the conclusion that all these details were equally genuine.

The Baron de Geymüller does not attempt restoration in this volume; he leaves that to those who have more time and more capacity, as he says, for that class of work, and has aimed at stating his facts with great brevity, mindful of the time of others as well as of his own. The effect of the Peruzzi plan, if accepted, would be to modify Canina's plan in several important points: more particularly, the apartments with apsidal ends, which on Canina's plan are shown at right angles to the axis of the Pantheon, must obviously, whatever their precise shape and proportions, have been placed parallel with the axis of the Pantheon and of the centre line of the bath buildings. On the other hand, Canina's central circular hall, intermediate between the Pantheon and the opposite end of the axis, seems confirmed by the remains of two jambs shown on Peruzzi's red-ink plan at some distance from the rest of the walls, and coinciding almost exactly with the position of the door in Canina's plan.

The remarks in regard to the Pantheon in Baron de Geymüller's book refer to certain sketches attributed to Philibert de l'Orme, and in the possession of M. Chevignard, of Paris. Whether by De l'Orme or not, they are studies of his period by some architect making memoranda of the remains of Classic architecture in Rome. These sketches have special reference to the great circular light in the top

* Documents inédits sur les Thermes d'Agrippa, le Panthéon, et les Thermes de Dioclétian. Par le Baron Henry de Geymüller, architecte. Lausanne: Georges Bridel. Paris: J. Baudry. 1883.

of the dome, and furnish the evidence which was evidently at that time existing as to the former treatment and decoration of this portion. They show the section of a cornice of four principal members; an ovolo with a leaf ornament at the top, next a dentil course, beneath that an egg-and-tongue moulding on a convex section, and below a common form of fluted ornament on a concave section. All this is executed in metal (bronze, of course), as shown on the section, where the thickness of the metal is indicated. Below this is the place where there *were* the plates of a decorative frieze, but of which there was only left, at the time the sketch was made, a set of upright metal bars at regular distances, with hooks or pins welded on them at the sides, evidently for the purpose of attaching the plates. The same hand gives a rough perspective sketch of the opening, but quite out of proportion; the external outline of the whole dome is roughly scrawled on this sketch. The successive bars for attaching the frieze are also shown in a still slighter sketch by Antonio Sangallo, of which a fac-simile is also given. There is a fac-simile of another sketch, also attributed to De l'Orme, at all events by the same hand, whether his or not, which made the others,—showing the bronze covering of the roof of the dome externally. Part of the sketch shows the step arrangement of the exterior surface, but carried much further up the dome, and in a greater number of steps, than we now see it; and another portion shows it covered with a ridge-and-furrow arrangement of metal in convex curves or waves, with a fillet at the crest and trough of each undulation. It seems difficult to determine whether this was made from any indications then existing, or whether it it is an imaginary restoration by the sketcher. But the careful and realistic manner in which the bronze supports of the frieze before mentioned are shown, indicates plainly that they were drawn with the object before the eye, and it seems hardly likely that the same hand in a sketch made at the same time should have treated the matter in such a different way, and jumped immediately from realistic to imaginary sketching.

The volume concludes with the reproduction of some sketches by an Italian architect, somewhere between 1450 and 1520 (the author does not tell us how he fixes the date), of the Baths of Diocletian, of more elaboration than any other of the sketches given, but of which the chief interest lies in the insertion of a solitary column in the plan, forming the centre of the great semicircular sweep in the outer boundary, which is a characteristic of the Baths of Diocletian. This column is found in no other representation of these baths. Palladio, who (born in 1518) came in the period immediately following that to which these sketches are ascribed, gives not a hint of it in his restoration. It may have disappeared in the interim. It is a probable enough feature in itself; it is given *with measurements* by the unknown architect, who must have had something to measure; and the probability is that it did exist, and that either Palladio overlooked it, or that some one had "looted" it before he came upon the scene.

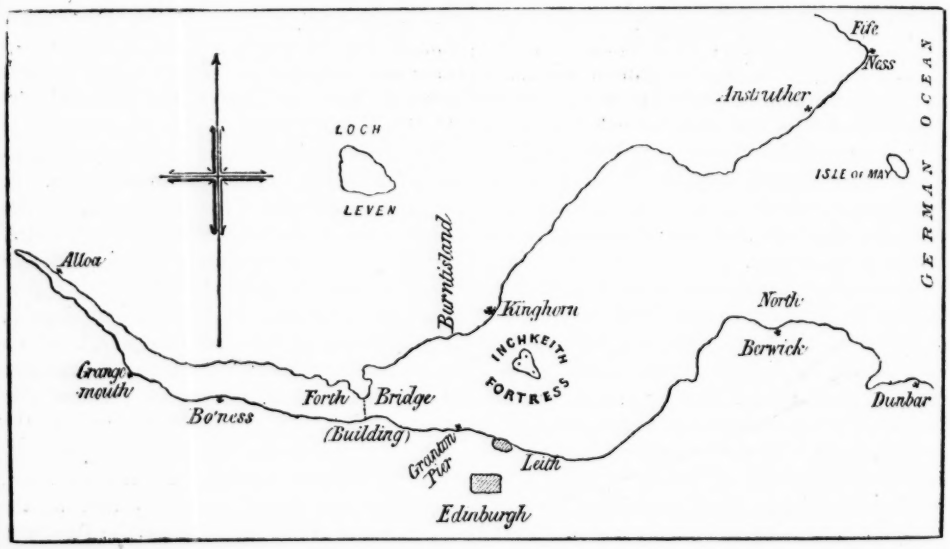
Take them as we will, the facsimiles in the volume, and the suggestions thrown out, are of great interest to students of classical architecture. The book in which they are given, with its large type and wide margins, forms an addition to the architect's library, which, though small in bulk, is to be valued both for its contents and the setting in which they are framed.

The Hospitals Association.—The session of 1884–5 was opened with a *soirée* at the rooms of the Medical Society of London, on Saturday evening last, when, notwithstanding the inclement weather, a large number of guests responded to the invitation issued by the Council. There were present the lady superintendents and secretaries of most of the principal hospitals in the metropolis, besides other guests, and a very successful and enjoyable evening was spent.

THE DEFENCES OF THE FORTH ESTUARY.

INCHKEITH FORTRESS.

PUBLIC anxiety has of late been in rather an acute stage with regard to the great question of coast defences, and this anxiety, as we have seen, has given birth to solicitude and action on the part of the Government. The cry is somewhat vehemently raised that the British Navy has fallen away from its former high estate of arbiter of the seas, and that as now constituted its power of attack or defence is no greater than, if so great as, that wielded by at least one other of the world's Imperial naval armaments. The partial alarm thus created, while calling us to a closer examination of the actual relative condition of our Navy, is inciting us also to a more solicitous scrutiny of our second line of island defence, represented by combined land fortification, and floating battery, gun-boat and torpedo services. Time was when it suited the British fashion to hold the inner defensive *ceinture* as but of light consequence; but times and armaments and modes of ship propulsion have changed, and the national estimate with regard to the several offensive and defensive values have changed with them. We have grown in solicitude, especially of late, with regard to the efficiency of stationary batteries round the coast, and have come to a tacit admission of the possibility of some such contingency as that of having to rely upon these alone for the "guarding of our native shores." Various new works have been executed from time to time, and these, under the present accentuation of anxiety, not to call it alarm precisely, we are examining somewhat crucially, while seriously contemplating extensions and additions in various quarters.



Perhaps the most important of those coast defence works which are of more recent construction is that series by which the entrance to the inner section of the Firth of Forth is now guarded, and to which in August last, as may be remembered, was applied the very novel test of a bombardment from the guns of a friendly ironclad. The island of Inchkeith, on which the main portion of the defensive work is constructed, lies twenty-five miles within the wide channel of the outer Firth, at the very throat of which the Isle of May stands sentinel-wise and lonely. It is distant from the port of Leith rather less than four miles in a direction almost right across the estuary. From Kinghorn Ness, on the Fifeshire coast, it lies about three miles nearly due south, occupying a portion of the mid-section of the estuary, with the rather narrower passage channel, though much the deeper of the two, bearing to the north. It extends about a mile in length, by an average breadth of one fifth, its rocky coast line enclosing in all 70 acres of pasture land, which formerly was so much prized for grazing purposes by the Gallic allies of the Scots as to give rise to the French christening of "*L'isle des chevaux.*" Spring water is abundant and of excellent quality, coming as it does from strata of the coal formation, the same as those found on the neighbouring mainland of Fife. It was largely from this source, at one time, that, when weather permitted the approach of small boats, the vessels brought up in Leith Roads used to procure their watering. The island is barely five miles distant from the city of Edinburgh, off whose various points of elevated vantage it is distinctly and familiarly descried whenever the atmosphere is unobscured, the white tower of the lighthouse and the dark brown heath and rock showing by day, and the ever-recurring flash of the powerful reflectors taking up the signalling by night. Between nine and ten miles higher up the Firth, at the ancient Royal or Queen's Ferry, are situated the massive engineering works under the slow but sure operations of which the wide estuary itself is being spanned by a high-level mast-freeing railway bridge, in two principal arches of about one-third of a mile each in stretch, and representing one of the most gigantic engineering enterprises of any time. It will form part of the defensive functions of the new Inchkeith fortress to hold this great structure scathless from the enemy's guns in time of war.

Inchkeith has figured as a place of a certain mark from very early times. The ancient northern trunk ferry route from Leith to Kinghorn grazed the coast-line of the rock, which thus became a subject of constant notice on the part of the frequently passing traveller. It owes its present name to the old family of the Keiths, upon whom it was bestowed by Malcolm II. Towards the close of the fifteenth century it figures as a lazar refuge for the city of Edinburgh, during a prevalence of the pest. Protector Somerset of England, after routing the Scottish army at Pinkie in 1547, had his eye caught by the commanding position of Inchkeith, and ordered the erection of a temporary fort there. On retiring he left it but lightly garrisoned, and the island was soon thereafter recaptured by the allied Scottish and French. The English initiative was followed forthwith however, and improved upon; Somerset's temporary works being thrown down and regular and permanent—as then designed—fortifications erected, under the direction of competent French military engineers. These consisted of several bastions of powerful model, as estimate of power then went, connected by a strong wall of circumvallation, which at stated points attained a height of 20 ft. In 1560 the place was attacked by the English fleet unsuccessfully. At the peace which was soon afterwards concluded three score French artillerymen were appointed to the permanent care of the works; but the Scottish subsequently became jealous of this arrangement, dismissed the garrison, and destroyed the fortifications, to make sure, as they stated, that there should be no further temptation there for the stepping in of the foreigner to seize and possess. Only one fragment of the original ashlar masonry remained above ground after this rather drastic cure had been applied, and

the same was to be seen by the few visitors to the rock down to the beginning of the present century, with the monogram of Queen Mary lettered on one of the blocks. In 1639 the Marquis of Hamilton, an adherent of Charles I., sailed into the firth and landed on Inchkeith the raw and sickly English soldiery (lads mostly) he had brought with him. These were almost directly reshipped and sail made south home again, with no incident except that of landing on the dismantled rock alone; and after this, Inchkeith figures not at all in the annals, until eighty years ago when it became chosen as a lighthouse station. The highest point of the rock stands 180 ft. above high-water mark. Upon this, in the year 1803-4, a tower was erected, and a light first exposed. Ten years subsequently the original conception was improved upon, and a revolving light from powerful lenses began, and still continues, to flash all around at a height of 235 ft. above sea level.

Athough no attempt was actually made towards the erection of a successor in kind to the French fortification of the sixteenth century, the subject remained one of stock talk and speculation over the whole of the 300 years, periodical scares from time to time galvanising the topic into a fevered though unsustained activity. An instance in point is the descent of that daring renegade Scot, Paul Jones by adopted cognomen, in 1779, the year after he had surprised the port of Whitehaven on the west coast, captured two forts with thirty guns, and set fire to the shipping there. At the head of a squadron in the year named, he entered the Firth of Forth with a special and even previously avowed eye on the port of Leith and city of Edinburgh, and had actually brought to under the lee of Inchkeith and lowered and manned his flotilla of cutting-out boats, when a vicious land squall descended from the south-west, compelled instant re-embarkation, and literally blew the hostile fleet from the narrow waters out to sea, upon which a few days afterwards, off the Yorkshire coast, the daring Jones fought and captured the English frigate *Serapis*, thus showing that the menace from which the Forth ports and towns had been preserved was no empty one. The call for defensive works was loud at this crisis from all points of the coast; and especially loud from the neighbourhood of Edinburgh when the fact of its miraculous escape became known; but the peace came, and the Scottish estuary had for a further term to put up with such a defensive show as that furnished by a shore battery and Martello tower at Leith, together with whatever floating armament might for the time be in commission towards the safeguarding of this particular part of the coast.

To the Cabinet immediately preceding that now in power fell the actual initiative with regard to the works thus so long talked of, and, after the final resolution was framed, it cannot be said that, whether in the case of the late Government or that of their successors, there has been other than all due diligence in the prosecution of the design. The island of Inchkeith, which anciently, after the termination of the Keith possession, reverted to the Scottish Crown, and subsequently fell to the proprietorship of the noble family of Buccleuch, was once more acquired by the Crown as a first step. Works were commenced, and the difficulties of construction proved from the outset far from contemptible. The steepness of the acclivities upon which the fort works were to be raised was found so great as to preclude the employment of horses for draught or carrying purposes, and compelled recourse to mule power exclusively. The only available landing also was found in a high degree insecure, opportunities of favouring tide and weather requiring assiduous watching, even after the erection of a new jetty of considerable size and strength. The defensive works resolved upon consisted of three separate forts on the island itself, conjunctly with one on the mainland at Kinghorn Ness, fully three miles to the north. Once entered upon, operations continued unceasingly for several years, attracting but trifling public notice until towards Midsummer of 1881, when the forts were announced as almost in readiness for the heavy guns with which it had been decided they were to be armed. The island in map shape has the appearance of a roughly lined isosceles triangle, with the sharp angle pointing south and by east in the direction of Leith generally; the others bearing to the right and left on the north and pointing generally in the direction of the Fife coast, the separating channel—and the favourite one for shipping, as the deeper—running at this point to a breadth of about three miles. A fort of combined earthwork, stone, brick, and concrete now occupies each of these island angles. They are in principle the same, though differing slightly in detail, being constructed on what may be termed a modification of the polygonal system, features of the bastion type being admitted into and incorporated therewith. The emplacement for the gun is of concrete, and takes the form of a turret on the Moncrieff system, the firing being on the barbette principle,—that is, not out of an embrasure, but right over the parapet itself, an arrangement possessing the immense advantage of allowing the gun an unimpeded sweep of nearly half a circle. The parapet is cut with a slope downwards on the outside to admit of firing at extra close or depressed range. A trench within the concrete pediment of the turret runs round the emplacement of the gun, affording shelter to the gunners when in action. The magazines, floored with wood, furnished with lifts and speaking-tubes, and lighted under strictest precautions, are all casemated and bomb-proof; the covered ways and inside chambers are of the strongest masonry, and earthworks surround the whole; the ditches of these being under the extra defence of intramural casemated vaults pierced with musketry loopholes. The forts are numbered one to three, north-west, north-east, and south respectively, the last being turreted for two guns (as is also the case with the mainland fort on Kinghorn Ness) and the others for one each. Towards the close of 1881 the armament for the new Forth estuary defence works arrived from the arsenal. It consisted of six 18-ton muzzle-loading 10 in. rifled guns of wrought-iron with steel tubes, and of power equal to sending a 400 lb. shot through a 12 in. wrought-iron plate at 1,000 yards. They were forged in 1868 and are sighted up to 4,800 yards of a range,—three miles nearly, though destructively effective at a greater distance than that. These monsters,—in Scotland there are no other guns approaching them in calibre,—as settled now in permanent position, are found mounted on wrought-iron sliding carriages working upon an iron platform, and set in motion by the action of four movable trucks with winch handles. The altitude of the three Inchkeith batteries varies considerably, No. 3, over against Leith and Edinburgh and furnished with two guns, standing at 39 ft. only; No. 2, on the north-east, at 85·5; and No. 1, on the north-west, at 122·75 above high-water mark.

The efficiency of guns and emplacements, as above described, was first tested in September of last year, in presence of Major-General Alastair McDonald, Commander of the Forces in North Britain; Sir Andrew Clark, Inspector-General of Fortifications; Col. C. H. Ingolby of the Royal Artillery; and others, when, from the throat of the 18-ton gun on No. 1 Battery, came the roar of a blank-cartridge salvo, forming the first artillery report sounded from off that rock for over 300 years. On that occasion each of the four guns on the island fired three rounds, the charge consisting of 44 lb. of pebble powder. The action of the guns under this partial test was held as satisfactory. Towards midsummer of the present year the island armament was for the first time tested with ball firing, the missile used being a 400 lb. Palliser shot under a charge of 70 lb. pebble powder. The result was also in this case satisfactory. Contrary to expectation it was found that the lighthouse suffered not at all, either from concussion or from any other cause. At about this time a proposal had been afoot for the utilisation of the fortress in volunteer big-gun practice, the suggestion finally falling through for the time, though possibly under the present revival of coast defence discussion in its acute stage, the matter may come up for reconsideration, and with better prospects of a more practical result. Last August the new works were subjected to the severe test of an actual bombardment from floating battery-guns of various powerful types, a thing altogether without parallel in the history of the country's progress in the science of attack and defence. The passively defensive qualities of the Inchkeith fortifications were pitted against the actively exerted destructive forces of a ship-of-war of the first rank, the *Sultan* being the vessel chosen thus to make trial of her powers. War Department experts were present in considerable force, taking careful notes of firing results, the operations being understood to rank as of the highest importance in the official mind, although, of course, the sum of the conclusion finally arrived at has not been given to the public. The opening of the bombardment was fixed for August 7th, previously to which date all conceivable precaution had been taken against possible mistake or disaster of a serious kind. The lantern of the lighthouse was strongly sheathed in timber, but in case this might not suffice for the prevention of damage of an extensive description, an iron lighthouse of temporary construction was held in reserve, and ready for entering upon the necessary service of the night in the event of the permanent tower or its lantern, or revolving machinery, becoming disabled. No. 2 battery was that selected for the attention of the *Sultan*, that vessel taking up position in the deep water of the channel to the north. The men of No. 2 battery retired within the lines of its neighbour, No. 1, their places being supplied with wooden dummies, so as to test the probable loss of life incidental to such an attack as that arranged. The lighthouse people were received in temporary quarters at the southern battery. The object of these hold experiments was, according to common belief, to ascertain the effects produced by the discharge of machine and rapid-firing guns on a 10-in. rifled muzzle-loading 18-ton gun, mounted *en barbette*, but probably the ends of experience and test aimed at were more general in their scope. Operations lasted over some days. In the earlier part of the assault the machine guns tried their powers of swift firing at 1,000 yards, and subsequently came the heavy metal firing at from 1,500 to 3,500 yards. The authorities have been wisely reticent with regard to the impression they carried away, but it is held as accepted that the fort in its *rôle* of passive resistance gave fair satisfaction. The turret sustained trifling damage only, considering the masses of projectiles of all kinds hurled against it, while only six of the dummy gunners were put *hors de combat*. The lighthouse sustained no hurt at all. The counterpart or complement of the experiments of August last would be the mooring of an ironclad two miles off in the deep fairway channel, and letting the 18-ton gun of Battery No. 2 have its will of her; but the greater scope for wholesale destruction of costly war material, involving possibly the total loss of one ironclad, with armament and furnishings complete, bars the way to a cut-and-dry realisation of the kind, and the sleeping lions on Inchkeith must bide their time. The menace they silently hold out may happily prevent that time from ever maturing.

NOTES.

THE thirteenth Report of the Local Government Board, 1883-84, has just been issued. It forms no exception to the rule of the annual increase of the importance of the portion of the national progress that comes under the purview of the Board. As on former occasions, the Report is divided into the three heads of the Administration of Laws relating to the Relief of the Poor, the Administration of Laws affecting Local Government and the Public Health, and Local Taxation and Valuation; followed by a copious appendix. Under the first head it is satisfactory to learn that the number of paupers, both in-door and out-door, in England and Wales, is less, absolutely than, in any year since 1879, and less, relatively to the number of the population, than in any year

of the decade, except 1877 and 1878. The year 1849 is the first year for which the actual number of persons receiving relief on a given day can be returned. The largest number ever since then tabulated was in 1863, when a total of 1,142,624 paupers, or 55·6 in every 1,000 of the population, is recorded. In 1883 the total number was 782,422, or 29·6 in every 1,000. The lowest number on record was in 1877, being 719,949, or 29·4 in every 1,000 of the population. But while there is a reduction in the number of paupers, the reverse is the case as to the cost of their support. The sum expended in relief in 1863 was 9,325,071*l.*, or 8·19*l.* per pauper. The sum expended in relief in 1883 was 8,353,292*l.*, showing a steady annual increase since 1876, and being at the rate of 10·67*l.* per pauper, against 10·45*l.* in 1882. The incidence of the poor-rate on the population in 1883 was at the rate of 6s. 4d. per head, or of 1s. 2·2d. in the 1*l.* of rateable value. The number of paupers in the metropolis was larger than in any year since 1875, being 102,193; or 26·2 in every 1,000 of population. Each of these paupers cost 21·33*l.*, making a charge of 1s. 6¾d. in the 1*l.* on the rateable value.

THE expenditure of the local authorities throughout the country shows an increase which, considering the utter want of guidance as to the principles and details of expenditure which is so peculiar a feature of our legislation, can only be called alarming. In 1874-75 these bodies borrowed 11·9 millions sterling. In 1881-82 they borrowed 15·3 millions sterling. The amount of loans outstanding in 1874-75 was 92,820,100*l.* In 1881-82 it had risen to 151,704,640*l.*, or by 63 per cent. in seven years. The proportions of national and local debts were as follow:—

Year.	National Debt.	Local Debt.	Total.
1872	... £789,198,837	... £69,259,839	... £858,458,676
1882	... 763,045,940	... 151,704,640	... 914,740,540

In the former year the total debt was 8·7 per cent. of the National Debt. In the latter it was 19·8 per cent. The rates made and expended by these local authorities show an increase corresponding to the activity of their borrowing powers. For the year 1871-72 they amounted to 17,977,866*l.*; for the year 1881-82 they amounted to 27,959,953*l.*,—an increase of 55·8 per cent. in ten years. The comparison with the imperial revenue is as follows:—

Year.	Imperial Revenue.	Local Revenue.	Total.
1872	... £74,708,314	... £17,977,866	... £92,686,18)
1882	... 85,832,282	... 27,959,953	... 113,792,235

Thus, while the imperial revenue for the last-named year is at the rate of 2*l.* 9s. per head of the population, the incidence of rates and taxes together is raised, for England and Wales, to close upon 3*l.* 9s. per head, more than a third of the imposition on the pages of Rates and Taxes being thus withdrawn from Parliamentary control.

THE increase in the rateable value of property in the decade 1872-1882 very closely follows the remarkable and important law (*Builder*, vol. xlvi., p. 922) that national wealth, in so far at all events as it is measured by rental or by the rateable value of property, is proportionate to the square of the density of population. The rateable value of all England in 1872 was 109·4 millions sterling; in 1882 it was 141·4 millions sterling. The corresponding totals of population were 23·0 millions and 26·4 millions. The increase in the rateable value will thus be seen to tally very closely with the increase of the square of population; which, as the area of the country is fixed, is the same thing as the increase of the square of their density on the ground. It was shown in the article before cited that a comparison between the relative densities and rateable values of urban and rural districts gave results of the same nature as comparisons of the same values, in the same districts, at different periods. This last calculation is fully borne out by the figures now given by the Local Government Board.

AT the last meeting (before the recess) of the Westminster Hall Committee on Friday, the 5th inst., Mr. Pearson brought forward a new design for making a ground-floor cloister lower than the first one (8 ft. high only), and an upper range of rooms 16 ft. high. The ground-floor cloister he "had not appropriated to any special purpose." The whole building would be about 6 ft. lower than the former one, and would allow the flying buttresses to be seen; "the buttresses," the *Times* report gives it, but evidently the sense is that the flying buttresses would be left visible, and not cut across by the roof. This is an alteration entirely in the direction we have been advocating: in favour of architectural effect rather than mere archæology. Messrs. Waterhouse, Ewan Christian, A. W. Blomfield, J. Oldrid Scott, and James Brooks gave evidence mainly in support of Mr. Pearson's scheme. Mr. Christian spoke contemptuously of the proposal to place "a trumpery post-and-pan work screen before the wall"; but was it proposed by any one to do this as the *permanent* settlement of the point? If so, that would never do. We understood Mr. Stevenson's proposal of this nature to be for protecting the exposed Norman wall for the time, pending the question of new buildings. Mr. Ayrton was called as a witness at the opening of the sitting, as a former First Commissioner, in order to state that other First Commissioners, himself included, had not thought it necessary to entertain the idea of completing the Houses of Parliament according to Sir C. Barry's design. He began, however, to give more evidence than the chairman wanted, being indiscreet enough to talk about not wishing Westminster Hall to be unduly exposed, and also admitting that if more room was really wanted, Sir C. Barry's scheme was the best. Upon this he was promptly suppressed, in accordance with the tactics which seem to have been carried on throughout, as far as the chairman is concerned.

IN the report of the same committee meeting we read:—

"Mr. C. Barry, recalled, stated that since he had expressed his belief that the floor of Westminster Hall had not been raised within the memory of man he had received a letter from a Mr. Adams, some sixty years ago a clerk in the Office of Works or Woods and Forests, stating that Sir Robert Smirke had raised the level of the floor 2 ft. or 3 ft., for the reason that the tide used sometimes to enter the Hall, obliging barristers to use boats to get to the Courts. This was some years before the fire in 1834."

The memory of Mr. Adams must have deceived him. The statement of the matter in Sydney Smirke's communication to the Society of Antiquaries on February 4, 1846 ("Archæologia," vol. 26), is as clear as anything can be:—"In forming the new pavement it has been necessary to remove the ground everywhere to the depth of at least three or four feet below the level of the Yorkshire flagstone floor laid at the latter end of last century: about 1 ft. 4 in. below that level another floor of Purbeck stone was found, the level of which appears, from the door-jambs finishing down to it, to have been that adopted in Richard II.'s time. This level has, therefore, been fixed for the new pavement, and the addition thereby given to the walls of the Hall much improves its architectural effect, at the same time that the original proportion of the building is restored." Mr. Butterfield, in a letter commenting on the same fact, says:—"I am not sorry to see, as this document of Mr. Adams's implies, that people are ready and anxious for still further height by some means. They will not get it, however, by internal excavation, if Mr. Smirke's account is the true one; nor will they get light as well as height by going downwards, and light is more needed than height. They can only get it by lifted roof and lengthened windows, as I have proposed."

WE are glad to learn that Mr. G. J. Symons, to whose persistent energy we owe most of our definite information as to British rainfall, is turning his attention to the collection of data with reference to the damage annually caused by lightning. Our want of any systematic observation as to a class of misfortunes which are to a great extent preventible, contrasts very disadvantageously with the careful investigations that have been carried on in some other countries. The notes now brought forward only extend over about three months, but they include some 600 cases, in which buildings of different kinds, haystacks, men, or animals have been struck by the electric fluid, and the damage thus caused is estimated at upwards of 30,000*l.* Most of these fire-strokes, moreover, occurred in two days out of the three months; of which the 12th of August last was the most disastrous. The frequency of fatal thunderbolts in England and Wales is far less than in many other parts of the world,—even limiting the comparison to the continent of Europe. Yet from 1861 to 1871 one person out of every million of our population has been annually killed by lightning. The instances have been most numerous in the counties of Leicester, Rutland, Lincoln, Nottingham, and Derby, in which 18 persons out of every 10,000,000 were annually killed. In the metropolitan district the annual rate was as low as 2·92 per 10,000,000 per annum. The proportion of cases on record is much higher from 1871 to 1878 than from 1861 to 1871; but it is most probable that this is due to a fuller record being kept in the later period than in the former.

SOME fifty scientific men enjoyed a very pleasant excursion, on the 6th current, to visit the Brighton Water-works. With the terms of admiration as to the success of these works, and the skill and happy forethought of the engineer, in which the reporter of the *Times* indulges at some length, we are disposed very candidly to agree. There is, however, more to be said on the subject. The cost of the works and the cost of water to the inhabitants of Brighton are as essential points to ascertain as either the purity or the copiousness of the supply. The cost of the works, per million gallons (taking the figures for 1879) was 38 per cent. higher than the cost of the water-works which supply London. And although the working cost at Brighton, owing in great part to the careful utilisation of differences of level, is 27 per cent. less than the average in London, the price of water to the inhabitants is the same, within one pound in the million gallons; while the proportion of the water-rate to rateable value of houses is 18 per cent. higher at Brighton than in London. Another point overlooked in the account is this. Situated as Brighton is on the verge of the chalk cliffs, she is in an unusually favourable position for the interception of the subterranean outflow to the sea. The places are few in which such results are attainable. With regard to London,—as, of course, everything said as to water-supply is at once read in this light,—the nearest parallel is to be found in the locality of those springs which, in the neighbourhood of Grays and some other spots, escape into the Thames. That a valuable supply of water may there be intercepted is not improbable. But the first lesson to be borne in mind is the need of an adequate hydraulic survey of the country. In the absence of this no proposal for improved water-supply can be much more than guesswork.

THE Railway and Canal Freighters' Association received a reply from the railway companies last week to their application for reductions in rates to and from the Midland district. Various concessions are made,—notably the removal of hoop-iron from the "damageable" class, the reversion to the old charges for returned empties, and reductions in the rates for cut nails, iron-ore, coke, pig-iron, and cinders, from various places. The applicants are still very dissatisfied, however, in consequence of the railway companies not yet being prepared to give them an answer as regards the rates to ports,—Hull, Liverpool, &c. They also decline to make any alteration in the "private siding" system, or in the charges for "smalls" (a subject which, it will be remembered, was recently treated of at length in our columns), and the traders appear to consider the reply, taken as a whole, to be unsatisfactory. It is, however, a sign that the railway companies are prepared to give com-

plaints their consideration, even though the result may be somewhat disappointing. It was hardly to be expected that each of the thirteen points embodied in the requisition would be conceded, however reasonable they might have been. The companies would be very chary of exhibiting such wholesale graciousness, as a precedent would thereby be created which would result in their being flooded with similar applications from all quarters, and the traders may be wrong in their assumption that the deferring of the most important question (which, it must be remembered, is a momentous one to both parties) is an evasive way of shelving it altogether.

THE collection of seven works by M. Bouguereau, now on view at the gallery of Messrs. Boussert, Valaston, & Co. (late Goupil), in New Bond-street, should be visited by those who enjoy splendid technique in painting, and who wish to see the other side of the work of an artist who is chiefly known in this country as a painter of rustic figures. M. Bouguereau is, in fact, two artists. He is by turn a painter of rustic idylls, of very refined and expressive type, and one of the most learned draughtsmen and colourists of the day in the painting of the nude figure. His great picture in Bond-street (great in material dimensions) is "The Youth of Bacchus," a canvas the size of the room, with a number of life-sized nymphs and satyrs, and old Silenus, and all the rest of them,—a thoroughly pagan subject in idea, with the defect in treatment that it is not pagan enough. It is respectable and academical. The painter's higher powers are shown in the single-figure painting called "Byblis," a masterpiece of drawing, and not without poetic sentiment. Opposite to this is "Les Baigneuses," a purely realistic work, but of the most wonderful realism; the two figures seem full of life and warmth,—as Blake said (not quite truly) of his own figures, "the blood is seen circulating in them"; and this is all got by genuine solid painting: there are no tricks of any kind. Among the works exhibited is also an exquisite little painting by *the other* Bouguereau, "Ma Leçon difficile," a seated figure of a child with peculiarly expressive countenance. As far as the higher ends of painting are concerned, this is the best thing in the collection; but we must remember that the technical difficulties surmounted are not nearly so great as in such a work as "Les Baigneuses."

THERE is a move in Liverpool for having a gallery of historical casts of sculpture and architectural ornament, to which the lower rooms of the Walker Art Gallery would be devoted. Mr. J. P. Seddon, in his capacity as honorary secretary to the Architectural Museum at Westminster, has been speaking in support of the movement at Liverpool, both at the annual dinner of the Architectural Society of that city, and also in a special lecture given in the Free Library lecture-hall, and which seems to have attracted much interest. Mr. P. H. Rathbone, who has done so much to awaken and revive artistic interests in Liverpool, is also interesting himself in the matter, and previously to Mr. Seddon's lecture before named, Sir James Picton spoke in favour of it, mentioning that the Town Council had set aside a fund for enlarging the building, but this having been rendered unnecessary by the liberality of Sir A. Walker, who had defrayed the whole cost of the new buildings, it was desired to employ the sum that had been set apart in promoting further the usefulness of the institution, and they proposed to do so by forming the commencement or nucleus of this historical museum of casts. The money, certainly, could hardly be better or more appropriately employed, and we hope the new idea will be successfully carried out.

MR. MILLAIS'S "Waif," to be seen at Mr. White's King-street Galleries, is a painting of a little chubby-faced comfortable child seated on a doorstep, whose countenance, in its well-fed healthy rosiness, contrasts oddly with the rags in which she is dressed and with the idea conveyed by the title of the work. We should very much doubt the figure having been painted from any child of the social order and conditions indicated; it looks as if painted from an upper-class child, and then named and clothed according to the painter's fancy. The face, however, is one of the most admirable things we have had from the artist. Mr. Orchardson's "Her First Ball," in the same gallery, portrays, in his well-known style, a scene where a very shy young girl, looking still more awkward from the pinched up and ungainly dress she wears, is preparing to go through a minuet with a most dashing and exuberant young gentleman, whose manners are intended as a foil to hers. In the background are spectators, in each of whose countenances there is expressed some sort of interest in the performance about to take place, running the gamut from spite to mere curiosity or idle indifference. The painting is an excellent example of the painter's peculiar technique, and in action and expressive grouping it is not inferior to some of the best of its predecessors.

ANOTHER new theatre is proposed to be built in London, in the rear of No. 121, Regent-street, on the site of the unsuccessful Military and Naval Stores, with entrances from Regent-street and exits into Heddon-street. The theatre, which will be of rather unusual construction, will consist of a ground-floor which will be entirely devoted to stalls, with a balcony over, and will accommodate about 800 persons. The architect is Mr. J. M. Brydon.

HAMMERSMITH Bridge, which is about to be replaced by a bridge of much less graceful design, was designed and built by Mr. Tierney Clark, engineer to the West Middlesex Waterworks Company, who have extensive works at Hammersmith. The cost of the present bridge was 45,300*l.*, or a little more than half the cost of the proposed new structure. We can ill afford to lose a well-proportioned bridge, and it is a pity some means cannot be devised to make use of the present bridge upon another site, as was done with Hungerford Bridge, which is now at Clifton.

ACCORDING to a Liverpool paper, Mr. B. H. Thwaite has proposed a new system of dealing with the Pluckington Bank, which is causing so much trouble in the Mersey. He objects to the sluicing system that, when the greatest head or elevation of the flushing water is obtained, the ebb current of the tide is almost terminated and has not sufficient velocity to carry away the silt, which is not held in suspension, except with a certain minimum velocity of flow. His expedient is the use of a heavy pressure of water produced by turbines and led through pipes to immediate contact with the silt, so as to drive it into the tide current at the time when that is strongest and most able to carry away the silt. We gather that it is proposed to try this at Liverpool. We never had much faith in the efficacy of the sluicing system as proposed there, and, in fact, were somewhat surprised that it really had for a time exercised an appreciable though apparently not a permanent, influence on the bank.

The Sea Defences at Hove, Brighton, consisting of a sea-wall and groynes, for which Sir John Coode and Mr. Ellice-Clark are engineers, were put to a severe test on the 4th inst., when a heavy gale occurred concurrently with a high spring tide. The sea was very rough, and caused considerable damage at other parts of the coast, but the Hove works did not sustain the slightest injury, although the work is in a "green" state, and the filling has not yet been covered with the bituminous concrete which is to form a kind of deck to receive the weight of water which falls on the Esplanade in great force when the seas strike the wall. These works have been pushed on with great rapidity during the past fine summer, upwards of 30,000 concrete blocks having been made and fixed, and 16,000 cubic yards of concrete masonry fixed *in situ*. The Hove Commissioners are to be congratulated upon having their works so far completed as to have successfully resisted the trial of Thursday week.

ROYAL ACADEMY PRIZES.

THE medals and prizes awarded by the Council of the Royal Academy were distributed to the successful students on Wednesday evening last, December 10th, by Sir Frederick Leighton, the President. This being the off-year, in which the prizes are of less value and importance, there is no special address given. Sir Frederick remarked, however, that the drawings exhibited in competition in these off-years are deemed by the members of the Academy to be of great importance, as they indicate more clearly the training through which future Gold Medallists have to pass. Some of the competitions this year are of unusual excellence,—that for the painting of a figure from the life being so good that an extra medal has been awarded.

The competitions in modelling again come to the front, showing that the students value the reorganisation in the School of Sculpture, which took place three years ago, and in one of the prize subjects, "The Model of a Design," an extra reward has been given. The Armitage competition was also a little above the average. In architecture the Travelling Studentship was not so well competed for this year, and it is probable that some change will have to be made in the regulations to cause this prize to be more keenly contested.

The President then awarded the following medals and prizes:—

Painting and Drawing.

Creswick Prize, Landscape Painting in Oil. Subject,—"A Village Common." Prize, 30*l.*, E. T. Lingwood.

Painting of Figure from Life. First medal, Arthur J. Foster; second medal, H. S. Percy; extra, J. E. Breun.

Painting of Head from Life. First medal, T. E. Garvie; second medal, Theodora J. Noyes.

Copy of an Oil Painting. Subject,—"Portrait of an Old Woman," by Rubens. Silver medal, T. L. Hughes.

Copy of Landscape. Subject,—"The Lock," by John Constable, R.A. Silver medal, Frederick Everett.

Cartoon of Draped Figure in Chalk or Charcoal, Life-size. Subject,—"Virgil reading to Augustus and Octavia." Silver medal and 25*l.*, H. S. Percy.

The Armitage Prizes. Design in Monochrome for a Figure Picture. Subject,—"The Return of the Ark." First prize, 30*l.* with bronze medal, C. D. Richardson; second prize, 10*l.*, J. L. Davis.

Design in Water-Colour for the Decoration of a Portion of a Public Building. Subject,—An allegorical illustration of Poetry. To form part of a contemplated series of eight designs for the lunettes in the central Octagon Hall of the Exhibition Galleries; four of these designs to be allegorical figures or groups, representing respectively the Arts and Poetry, and the other four illustrative subjects. Size of lunette, 12 ft. 6 in. wide by 6 ft. 6 in. high. Prize of 40*l.*, W. S. Paget.

Drawing of Figure from Life. First medal, J. E. Breun; second medal, W. H. Margetson.

Set of Six Drawings of Figure from Life. First prize, 50*l.*, A. T. Nowell; second prize, 25*l.*, W. H. Margetson; third prize, 15*l.*, Sidney Paget; fourth prize, 10*l.*, H. S. Percy.

Drawing of Head from Life. First medal, Nelly Erichsen; second medal, Minnie J. Shubrook.

Drawing of Statue or Group, with Head, Hand, and Foot. First medal, W. F. Littler; second medal, Victor Hobson.

Drawing of Statue or Group. Prize of 10*l.*, T. L. Hughes.

Perspective Drawing in Outline. Subject: "Entrance to the Exhibition Galleries, as seen from the Door of the General Assembly Room, and Specimen of Sciography." Silver medal, F. C. Robinson.

Sculpture.

Model of a Design in the Round. First prize, 30*l.*, C. O. Richardson; second prize, 10*l.*, F. W. Pomeroy; extra, 8*l.*, A. G. Walker.

Restoration of a Mutilated Statue. Subject: "The Torso." Silver medal; no competition.

Set of Three Models of a Figure from Life. First prize, 50*l.*, F. W. Pomeroy; second prize, 20*l.*, H. A. Pegram.

Model of a Statue or Group. First medal not awarded; second medal, W. H. T. Venner.

Model of a Statue or Group. Prize of 10*l.*, W. G. John.

Model of Figure from Life. First medal, G. J. Frampton; second medal, A. G. Walker.

Architecture.

A Travelling Studentship of 60*l.* for a Design in Architecture. Subject: "A Block of Three Houses." Prize of 60*l.*, Fredk. Simpson.

Set of Architectural Measured Drawings. Subject,—"The Church of St. Stephen, Walbrook." First medal, E. H. Sedding; second medal, H. D. Walton.

Set of Drawings of an Architectural Design (Upper School). Prize of 25*l.*, J. A. Slater.

Set of Drawings of an Architectural Design (Lower School). Prize of 10*l.*, E. Guy Dawber.

Perspective Drawing in Outline. Subject,—"The Choragic Monument of Lysicrates, and a Specimen of Sciography." Silver medal, S. B. Russell.

There were only two competitors for the English travelling studentship this year. Considering that 60*l.* is offered, and that it is only expected three months should be devoted to travelling, it seems strange so few should come forward. The possible cause lies in the fact that the drawings must be made during the day-time, in a period of three weeks, and the class of students who could compete are perhaps in that position that they cannot be spared from their office duties. It is to be hoped, therefore, that the changes in the regulation which the

President spoke about may be a return to the old rule which obtained in the case of the Gold Medal, for which prize students were allowed to work out their designs at home, as is still the case with the painters and sculptors In No. 282,—Mr. Simpson's design, to which the prize has been awarded,—the author has endeavoured to give a distinctive character to each of the three houses. The area given was 90 ft. frontage and 150 ft. depth, of which it seems 40 ft. might be taken off for stabling at the back. Mr. Simpson's plans are of the ordinary London type, in which the staircase is placed at the back. On one side there is a novel and pleasing feature in the design, viz., the introduction of a reception-hall on the ground-floor, in the place of the usual morning-room facing the street. The dinner guests, therefore, would not have to go upstairs to the drawing-room. This arrangement was a favourite one in the houses of the beginning of last century. There is one defect in it: the coming guests have to run the gauntlet of those already assembled before they can get to the cloak-room. The introduction of a covered balcony on the first floor, obtained by setting back the wall, destroys the drawing-room for dancing purposes, though for other reasons it might possess advantages. The elevations of the three houses are designed in the Early English Renaissance of the beginning of the seventeenth century, and contain many pretty features. The author has been fairly successful in reproducing what a seventeenth-century architect, with very imperfect knowledge of the Classic orders, might have designed. How far a nineteenth-century student is justified in such reproduction, wilful or otherwise, is perhaps a matter of sentiment.

In the other design, No. 281, its author has treated the three houses as one block, and from an academical point of view (not Royal Academical, however,) his design is the most studied, and shows a more correct knowledge of architectural proportions. The plans of the three houses are similar. The staircase in each is placed in the centre and is lighted by an internal area, the dining-room being placed beyond and a morning-room or library in the front by the side of the entrance-hall. The author has made what seems to us to be a great mistake in the plan of the centre house by insisting on placing the door in the centre for the sake of the symmetry of his elevation; the library is thus confined to a narrow space with one window only, and much space is wasted on vestibule and passage. The ground-floor, as treated in the elevation, would not have suffered by the entrance doorway, the centre house being out of the centre. The elevations are designed in the style of the French Renaissance of Francis I.'s period, and are well drawn and composed.

The measured drawings of St. Stephen's, Walbrook, do not call for any special remark, except that they are well drawn by students who have caught the feeling of the work of that period.

Looking at the designs submitted in competition by the students of the Upper and Lower School for the 25*l.* and 10*l.* premium respectively, there is no doubt that the latter, as a whole, and (taking the three best) separately, are much better designs than those of the former and upper school, which speaks well for the future of the Academy school. Nos. 301, 299, and 298, might either of them have taken the 25*l.* in preference to the one selected.

Mr. Slater's design (No. 286) is picturesque but incongruous, carelessly drawn, and clumsy in its details. The capitals of the piers or columns in the front view are not the same as shown in the section, and neither agree with the wall antæ. The author's attention seems to have been mainly devoted to the design of a piece of Byzantine or Early Persian tapestry, which is not architecture. The arrangement of the plan is picturesque and good, and one is disappointed it should not have been worked out in a more reasonable and better style of architectural design.

No. 887, "Design for a Lodge and Gates," in the Early Italian Renaissance, is well designed, the monumental character given to it being possibly due to the author's intention that it should be in keeping with the mansion to which it forms the frontispiece.

No. 289, "Design for a Railway Station," must have been prepared for a very rich railway company. The carriage-drive runs under a magnificent peristyle of Ionic columns, flanked by wings, with large niches and fountains, surmounted by Michelangelesque figures. The whole design is carefully studied, of good proportions, and well drawn, and the only exception we have to take is to the clock turret, which is poor, and unworthy of its neighbour the peristyle.

Mr. Guy Dawber's design (to which the 10*l.* premium is awarded) is for a gateway and bridge, forming an entrance to a town. The bridge, of three arches, spanning the river, and the gateway with its octagonal staircase-turret, are all admirably designed in brickwork in the Flemish style, and show considerable acquaintance with the best types of Late Gothic brickwork in Belgium.

No. 300 is a design for the same subject, in which the author has treated his gateway as a triumphal arch. He has given too much importance to the first floor, in which on one side of the arch is the residence of the gatekeeper, and so far has destroyed the monumental effect. The cornice of the ground-floor becomes the impost moulding of the great arch, and he has made this ground-floor the podium for an order which flanks this arch,—an incongruity which is entirely out of keeping with good Classic design.

No. 299 has a well-designed bridge of two arches with a good characteristic fifteenth-century gateway. The octagonal turret at the angle on the ground and first floors might, we think, have been omitted with advantage, and the staircase carried up in the tower.

No. 298 has apparently been unable to complete his drawings; the detail of his elevation, in fifteenth-century Flamboyant Gothic, is well designed, though we must take exception to the heavy mass of brickwork above the arch, which should have been decorated with panels unless the windows, which are now at the back, had been brought to the front.

No. 289, also for a gateway and bridge, is in the Francis I. French Renaissance, and of fair design.

DR. JOHNSON'S HOMES IN LONDON.

"Nam quis iniquæ
Tam patiens urbis, tam ferreus, ut teneat se?"
JUVENAL.

"Mais moi, vivre à Paris! eh! qu'y voudrais je faire?
Je ne sais ni tromper, ni feindre, ni mentir."
BOILEAU.

On the morning of Tuesday, the 2nd of March, 1737, an ex-schoolmaster, and one of his only three pupils, started from Lichfield to try their fortunes in London. The latter, grandson of one of the cathedral vicars, purposed to qualify for being called to the Bar; but following his genius into another field, and having first acted at Ipswich under the pseudonym of Lyddal, drew the whole town (October, 1741), to see David Garrick as *Richard III.* at Giffard's theatre in Goodman's-fields.* The former, his wife's little fortune lost in the unsuccessful venture at Edial, had no other resources than an unfinished play and his fellow-citizen Gilbert Walmesley's letter to the Rev. John Colson, in whose school at Rochester his companion was to be placed.

This was not Samuel Johnson's first visit to London. He was taken thither in his infancy to be touched by the sovereign,—and ever retained a solemn recollection of the Queen's diamonds and black hood,—for a disorder whose congenital symptoms darkened all his life. On this second occasion his first lodging was a garret in Exeter-street, Strand, at one Norris, a stay-maker's: his customary resort, the Pine Apple in New-street, Covent-garden. As originally planned, Exeter-street ran behind Exeter-change, from the northern end of Burleigh-street to Katharine-street; Wellington-street being of much later date. The oldest map wherein it assumes its present form is Bowen's, published 30th of August, 1738. The western extension, cut off by the former garden wall of Bedford House, together with the return southwards into the Strand, was then styled Denmark-court. We next hear of Johnson at Greenwich, under date and address of 12th July, 1737, next door to the Golden Heart, in Church-street. He writes to Cave, of St. John's-gate, Clerkenwell, proposals for translating, from the Italian, Paul Sarpi's "History of the Council of Trent." Here he laboured with the last two acts of his Eastern tragedy. This same summer he returns to Lichfield, stays there some weeks, and finishes his play.* Johnson then brings his wife to town, settling first in Woodstock-street, next westwards of New Bond-street (where there are a few houses of that date), and then at No. 6, Castle-street, Oxford-market. The latter is now Castle-street East. The Market House, built by the second Earl of Oxford, in 1731, was replaced three years ago by Oxford Mansion.

We next trace Johnson from Castle-street to his lodgings (in the order given) in Boswell-court, Fleet-street; "The Black Boy," opposite to Durham-yard in the Strand; Bow-street; Holborn; and Fetter-lane; though the dates severally applicable to these migrations cannot with certainty be given. The interval is a fairly busy one; it is marked by various Lives, histories, translations from the French, a beautiful epitaph on Philips the musician, an ode to friendship, with a masterly albeit unremunerative account, in Latin, of Lord Oxford's library. The collection of Robert and Edward Harley, first and second Earls of Oxford and Mortimer, had been stored in the house which is at this day occupied by Messrs. Tilbury, High-street, Marylebone. Osborne, the bookseller, having purchased the library for 13,000*l.*, employed Johnson in preparing a catalogue. The book with which Johnson is said to have knocked Osborne to the ground for insolence was a copy of the "Biblia Græca Septuaginta," fol. 1594, Frankfort. Mr. Leslie Stephen says it lay in a bookseller's shop at Cambridge in 1812. The Government debates, under the guise of the Senate of Lilliput, ran from November, 1740, to February, 1743. In 1744 appeared one of his greatest biographical achievements,—the "Life of Richard Savage." But about this time absolute poverty compelled him not only to ask Cave for a guinea in advance,† but to keep in the streets by night, his wife the while, says Hawkins, finding shelter with a friend by the Tower. For the opening of Drury-lane Theatre by Garrick as joint manager and patentee (1747) he composed one of the two best prologues in our tongue. This same year he addresses from the Golden Anchor, Holborn-bars, to Lord Chesterfield his plan for a Dictionary of the English Language. Robert Dodsley, the Longmans, and other booksellers, agreed to pay him 1,575*l.* to cover all the author's expenses. Singularly enough five of the six amanuenses came from beyond Tweed-side. When we are reminded of their employer's prejudice against the Scots let it not be forgotten that amongst his numberless objects of charity were included these, even long after their labours for him had concluded.

For the better progress of his enterprise he removes (1747) to the house, No. 17, which forms the western side of Gough-square, Fleet-street.‡ In the three garrets on its third floor he endured for nearly eight years the drudgery of dictionary-making. A resident here, he made acquaintance with Reynolds. They met at the Misses Cotterell's, in Castle-street, Oxford Market (a street also memorable as the home of Barry), when Reynolds fixed Johnson's attention by remarking that the death of a person to whom these ladies professed great obligations would, at any rate, remove the burthen of gratitude.

Reynolds is commonly stated to have permanently settled in town in the year 1752, in a house opposite to May's-buildings, St. Martin's-lane. Mrs. Thrale, however, says that Johnson composed the fine "Rambler" on Procrastination (No. 134) in Reynolds's parlour, the printer's boy waiting for the copy. That paper bears date Saturday, 29th June, 1751. In Gough-square he provided a retreat for Dr. Levett and the blind Anna Williams, and could reckon amongst his intimate visitors such men as Garrick; Dr. Hawkesworth; Lord Southwell, F.R.S.; the Earl of Orrery, author of the "Life of Swift"; Strahan, the printer; the "very good hater," his dear Dr. Richard Bathurst; together with the no less beloved Bennet Langton and Topham Beauclerk. In 1748 he founded a club at the King's Head beef-steak house in Ivy-lane, where, according to Hawkins, he at once, and by common consent, presided as symposiarch. The tavern was burned twenty-five years ago, but the extensive cellarage remains beneath No. 4, Alldis's dining-rooms, on the eastern side. The year following Garrick, Barry, Mrs. Cibber, and Mrs.

* On the northern side of Great Aylie or Ayliffe street, between Zoar Chapel and Half Moon-yard. The Tenter ground or fields lay to the south of the street.

* The original MS., with various readings, &c., was presented by Bennet Langton to George III., and is deposited in the King's Library, British Museum.

† Letter to Cave, August, 1743.

‡ Distinguished by a Society of Arts' plaque. For papers *ad hoc* see the *Builder* for 1864.

Pritchard lent all their art to gain popularity for "Irene," enriching its author with about 300*l.* Nevertheless the necessity which he was always ready to alleviate in others is still no stranger to him, and on one occasion (1756) he is indebted to Richardson's loan of six guineas for release from a sponging-house.

Johnson's removal from Gough-square was due to the completion of his "Dictionary" and the breaking-up of his household by the death of his wife, than which latter, however hard her blows, Fate could deal him none heavier. Though the "Dictionary" brought him little profit its publication gained him many friends,* amongst them Dr. Burney. Continuing to publish the "Idler" in Payne's *Universal Chronicle* (April 15th, 1758—April 5th, 1760), he, after a brief sojourn in Gray's Inn, took rooms on Friday, March 23rd, 1759, in Staple Inn.† Here he set about and finished in six evenings his "little story book," as he called it ("Rasselas"), wherewith to defray the funeral expenses with some small debts of his aged mother, who had died in January of this year.

In 1760 he migrates to No. 1, Inner Temple-lane;‡ is busy more or less with an edition of Shakspeare, forms acquaintance with Murphy (who edited his works), and warmly espouses Gwyn's scheme for semicircular, as opposed to Mylne's elliptical, arches in the construction of old Blackfriars Bridge. The accession of George III. opened a new and brighter prospect, says Boswell, to men of literary merit who had been honoured with no mark of royal favour in the preceding reign. At the instance of several of Johnson's friends, amongst whom Thomas Sheridan and Murphy claimed to have taken, *ad hoc*, the initiative, Mr. Wedderburne (since Lord Loughborough) recommended him to Lord Bute, with the result that Johnson was compelled to acknowledge that for once a Scotchman (besides Buchanan) had written well, when Lord Bute signed his order for the pension. His circumstances thus rendered easy by the award of an income exceeding 600*l.* a year at the present time, Johnson could surrender himself to the allurements and more solid delights of society. Henceforward, of course, his career is only to be followed in the pages of Boswell. Him he first met in Tom Davies's shop, Russell-street, Covent-garden, on the evening of Monday, the 16th of May, 1763. The house is No. 8, on the southern side, adjoining what was Button's; and, lately known by a strange coincidence as the Caledonian Coffee-house, is now a fruiterer's. A few evenings later they supped together for the first time at the Mitre, Fleet-street; and on the night of Thursday, the 21st of July, at the Turk's Head, Strand (since rebuilt), the idea was first mooted which has given us one of the most delightful books of travel: the journey to the Western Islands of Scotland. It was in Greenwich Park on Saturday, the 30th of July, that Johnson avowed his preference for Fleet-street over all the charms of a rural prospect. In 1764 he and Sir Joshua Reynolds founded the club, named, at Garrick's funeral, the Literary Club, at the Turk's Head, Gerrard-street, Soho. The sign alone survives at No. 48, corner of Little Newport-street. The club has occupied in turn Prince's, Sackville-street; Telier's, Dover-street; Parsloe's, St. James's-street, one of the earliest of West End hotels; and (1799) the Thatched House, St. James's-street. A former home of the Dilettanti Society, the Thatched House, together with the two adjoining houses on its northern side, has since given way to the Conservative Club. On the 8th of July, 1765, Johnson is voted the unsolicited academic distinction of their LL.D. degree by Dublin University; but though he received similar honours from his own University, it does not appear that he at any time assumed the style of "Doctor." About this period morbid melancholy more than usually marked him for her own. There exists a painful picture of the distressing mental condition in which the Thrales found him one morning in his chambers (1765). Literally closing his lips, they carried him to Streatham forthwith, where for several years he found grateful distraction from the ills of life. In 1765 he leaves Inner Temple-lane for No. 7, Johnson-court (not, however, named after him), in the small paved yard that lies between Gough-square and Fleet-street. Unless, indeed, the numbers have been changed, this is the white house on the eastern side of the yard, and occupied by the servants of Anderton's Hotel, Fleet-street. Yet in J. Smith's view, engraved for Bohn's edition of Croker's Boswell (10 vols. 12mo. 1848), the figures are pointing to the corner house on the southern side, which is now numbered 8. The proprietor of the hotel informs the writer of this article that the unnumbered premises between Nos. 6 and 8 is the house in question. Having lived here for eleven years,—an interval chiefly memorable for his friendship with Goldsmith, his interview with the King in Buckingham House library, his tours in Scotland, Wales, and France, and a visit to Burke at Beaconsfield,—he changed in March, 1776, to No. 8, Bolt-court, hard by, where he wrote his "Lives of the Poets." The present Stationers' Company's School is generally pointed out as the house in question. At his death the house passed to a son of the printer Bensley, who carefully preserved it, and re-roofed it in 1817. A fire that broke out in 1807 did not injure any of Johnson's rooms. But in 1819 another fire consumed the whole premises, and no building has since been erected over the precise spot. The freehold of what had been four houses and a large garden was sold by the Bensleys to the Company some years ago, who, pulling down the offices erected after the fire, built the existing school-house, being No. 6 in the court. It was to No. 8, Bolt-court that Samuel Rogers came one day, but could not summon up confidence to await the opening of the door; and here too the elder Disraeli, having sent a poem for approval, called just a few hours after Johnson's death.

Here, in the back room on the first floor, on Monday evening, this date exactly 100 years ago, Samuel Johnson died, his last articulate utterance delivered to Miss Morris, daughter of his old friend. Thence by the very thoroughfares wherein, like to Charles Lamb, he loved to feed his humour, in sympathy with their multitudinous moving picture, his remains were carried to the southern transept, West Minster, there to lie beside the grave of Garrick at whose interment he had stood bathed in tears. Boswell cites his satisfaction when, to his inquiry on this point, Sir John Hawkins, his executor, replied, "Doubtless in Westminster Abbey." Yet in Hare's "Walks n London" (1878) occurs this passage:—"He was buried here by his friend Garrick, contrary to his desire that he might rest at Adderley, in Shropshire, which belonged to his friend Lady Corbet, cousin of Mrs. Thrale." In 1851 a tablet was placed against the pillar by his pew (No. 18), in the northern gallery of St. Clement Danes. The inscription omits to mention his abounding charity and earnest piety. Much will be said and thought this day of Johnson as a scholar, a moralist, and a poet; of his courage and sturdy self-reliance; much could be said of his tender heart, his affection for his friends, his great humour, his genuine enjoyment of honest sport. That he did not on all occasions cultivate the *leniores virtutes* which lend a grace to social intercourse, may assuredly, with his bodily afflictions, at this distance of time be overlooked; for, as he himself writes of Goldsmith to Bennet Langton, "Let not his frailties be remembered; he was a very great man."

* As also a diploma as M.A. of his University, dated the 10th of February, 1755, and the offer of a benefice.

† See his letter of that date to his step-daughter, Lucy Porter. The writer fails on careful inquiry to identify his rooms at Staple Inn.

‡ Pulled down 1857 now site of Johnson Buildings.

JAPANESE ARCHITECTURE AND ORNAMENT.

ARCHITECTURAL ASSOCIATION.

THE fourth ordinary meeting took place on Friday, the 5th inst., Mr. Cole A. Adams, president, in the chair.

About seventy new members were elected, and Mr. James Brooks was elected a member of the Association by acclamation.

Dr. Dresser, Ph. D., F.L.S., delivered a lecture an "Some Features of Japanese Architecture and Ornament." Japanese architecture, he said, was in part native and in part foreign. Japan was very similar to Great Britain in the fact that it consisted of three parts. The northern division is inhabited by a simple, kind-hearted race, having the most primitive of manners, whose dwellings are of a rude character, and whose temples are scarcely of a more advanced nature. The aloe temples consist simply of trunks of trees fixed into the ground, more or less vertically, on which are arranged horizontal members, arranged for forming a sort of roof. These members are covered with a very rude thatch. The main feature in this building is the roof, which is intended to give shelter from sun and storm, and is supported in a number of uprights. This was the anti-type of all the Japanese dwellings, because the most highly finished edifices consist of little more than uprights of some description, tie-pieces, and very elaborate roofs. Japan derived a great portion of its architecture from the continent of Asia. At an early period direct communication existed between Japan and Corea, the latter being made tributary not long after the commencement of the Christian era. Some of the Japanese architecture was brought from India by Buddhist missionaries. A temple about twelve miles from Kioto, was decidedly Indian in character, and the priests who had charge of it said it was built by Indian Buddhist missionaries about six centuries ago. As all the nobility studied the works of Confucius, great Confucian temples have been erected, but the greatest of these, built on a Chinese model, has now been converted into the National Library. Here they got Chinese influence brought to bear directly on Japanese architecture. Chinese architecture had two sources. The Chinese had resided in boats from time immemorial, and he would point to an example of a Chinese building which showed its boat-like architecture. The other source was the tent, and there were some Chinese buildings which consisted of right lines. The Japanese, so far as he knew, had never adopted the junk-like architecture, but they had adopted the tent-like form in many instances, while in not a few they had adopted the right-line character also. There were many proofs to show that the architecture of Japan was derived to a great extent from China. The columns of many of the temples were intertwined with dragons, and the same lattice work was used in both countries. The pagoda was also common to both China and Japan. It was said by many Europeans that the Japanese had invented nothing, but had improved in everything they had derived from other sources. [The lecturer here showed several photos of the central shrine of the Shinto religion. This, the oldest structure in Japan, was erected more than 1,800 years ago; and although the buildings composing it were razed to the ground periodically, yet exactly similar ones were erected in their places.] The next most ancient building was composed of huge triangular logs, and had for more than 1,200 years contained the treasures of the Mikado. An inventory made 1,200 years ago was said to represent the things now in this building, many of which were certainly from Central Asia. Style in architecture is influenced by religion, climate, and material. The mirror is the great symbol of the Shinto religion, the idea being that everything should be capable of being revealed to the world, as one's image is reflected in a mirror. A great deal in Japanese architecture was due to this religion, enjoining as it did the most perfect workmanship, and no "scamping." The Mikado is the god incarnate of the Shinto church. In every house there is a little altar or dais for the Mikado, with a shelf for a flower or vase. This niche is treated with the greatest reverence, and constructed with the utmost care. Even in the poorest houses the wood, which is without lacquer or colouring, is so beautifully smooth that he used to delight in stroking it. Dr. Dresser next referred at some length to the sun and fire worship, to Phallic worship, and to the worship of heroes. The Shogoon, with whom Great Britain made a treaty, was a Buddhist, and under his power the most gorgeous Buddhist shrines had been erected and maintained throughout the land. Buddhism introduced the greatest harmony between man and all created things, and this would explain the inflnence such a religion had brought to bear upon Japanese architecture and art. As to climate there was a wet season, with a continuous downpour lasting some six weeks. In the south the climate was tropical; in the middle, semi-tropical in summer, with great cold in winter; and in the north the cold in winter was intense. The Japanese climate, therefore, demanded a roof over one's head; at the same time it was a land of earthquakes, which was one of the greatest difficulties the Japanese architect had to overcome. He (Dr. Dresser) was the first to enunciate the plan on which the Japanese pagodas were built. The central upright, he found, was not continuous, but, like the clapper of a bell, it was really dependent from the top,

so that when an earthquake took place it swung always keeping the centre of gravity within the base. For this reason no pagoda had ever been known to be upset by an earthquake. Japanese houses were not fixed to the ground, but were built of uprights, horizontal tie-pieces, a roof and a floor, so that, in case of an earthquake, the houses rocked about and then settled down again. Then they had the rain to deal with. The Japanese only built their castles of stone, in enormous blocks, leaning inwards, and fitted together in a peculiar manner. As the ordinary buildings, therefore, were of wood, they had to be protected from water, and the lower part of every wooden column was encased in bronze, so that the water should not get into it. The walls, palings, and even clothes-props had roofs to protect them from the weather. The material used for building was, as he had said, chiefly wood, but the English in Japan had been trying to persuade the people to use brick. If they did so he believed the first big earthquake would bring them down. It was difficult to understand the nature of Japanese architecture because there was an etiquette in it. If a man wished to build a house, he had to go to the master of the ceremonies for a plan, which bound him down to the number of doors, &c. There were a great many different kinds of roofs. The lecturer here referred to the photographs exhibited on the wall, drawing special attention to a thatch roof with a curious bit of gable, similar to the houses of Sumatra and Java. Roofs are in some cases covered with thatch, and in others with tiles. The thatch consists chiefly of rice-straw, and in the great temples the inner bark of a coniferous tree is used, the little plates of bark forming an exquisite thatch. The roofs are of various kinds, but the pitch is never very high. There is the right-line roof and there are curious curved roofs. Roofs are supported by a system of bracketing. The roof is brought out gradually by brackets, and in some cases the brackets used are of a simplicity and correctness which are really charming. In other cases this is carried to such a degree of complication that it is almost impossible to understand it. The ceilings are generally coffered, some being of great beauty. The ceilings of the temples are of a coffered character, sometimes richly decorated with flat ornamentation, and in other cases with carved woodwork. Circular columns are most general, but there are also octagonal and many-fluted columns. The columns are occasionally enriched by a dragon twining round them, or by sprays of the blackthorn or other plants. In other instances the columns are covered with very fine diaper-work in relief. The walls used were to be especially noted, one example being formed of tiles placed one on another, covered with cement, and topped by the roof. Some roofs consisted of stone at the bottom, then came uprights with tie-pieces, and below these were carvings of water-fowl. Walls were often enriched by carvings, especially in the upper part, where they were sheltered by the roof. Dr. Dresser then gave a graphic description of the great shrine of Niddo, which is approached by an avenue, forty miles in length, of coniferous trees. With regard to ornament as springing out of the architecture of the country he could say very little indeed. Japanese ornament was of a peculiar kind, and they had a distinct conventional ornament which did not consist simply of the representation of natural objects. Dr. Dresser showed several circular ornaments in imitation of crests, and others which sprang from fire. He also exhibited a series of drawings he had had made in Japan by a native artist. There were surface drawings, but the carvings they depicted were as highly coloured as the drawings. The Japanese in their temples used a high colouring, owing to the fact that the roof very much overshadowed the building, while the floor was polished black, all the light the decoration received being reflected from the black floor. Water was the decoration used on most of the columns. Some time ago the *Builder*, in devoting six columns to a review of a work of his,* made the following remark,—"What could be more absurd, more contrary to the whole meaning of ornament as applied to architecture, than to sculpture conventional water all over a wooden column? The author seems to have some difficulty in swallowing this water." Well, this was what the *Builder*, 1878, page 635, said, speaking of some terra-cotta piers in the Natural History Museum at South Kensington:—

"The design of these piers is certainly novel and pretty. They are oblong in plan, the longer side parallel with the length of the room, and consist of a kind of pedestal about three-fourths the height of the room, the remaining portion breaking into four pilasters square on plan, and with foliage ornament on the outer faces and the capitals: the pedestals in the room devoted to marine fossils are decorated in a very pretty and piquant manner by very low reliefs of fish and other aquatic creatures, worked on various blocks here and there in an accidental sort of manner, and as if from the inspiration of the moment in working the material, the general face of which is relieved also by waving lines symbolical of water, with an ornament of conventionalised aquatic plants delicately modelled in very low relief just over the plinths. The effect of this treatment is very refined and unusual, and gives a picturesque interest to what would otherwise be surfaces of bare jointed terra-cotta."

He might say that he did not swallow the water. He had intended to say a few words about the beautiful poetry of Japanese art. There was a poetry and meaning about almost everything the Japanese did, and there was scarcely a thing in a Japanese building which did not remind the people of something they loved. There was nothing in connexion with the great shrines which was not lovely in colour and harmonious in its general effect.

The Chairman, in opening the discussion, said it was interesting to trace in Japanese art, as in all other arts, the influences which had given rise to, and formed it. The beauty and care which the Japanese bestowed upon their art, making it a part of their religion, was a proof of the likeness between Japanese and Greek taste. In Japanese art they could see that precision of hand and eye which gave it a certain fellowship with Greek art. The Japanese, while approaching nature, yet preserved an exact conventionalism. The old Greeks, like the followers of the Shinto religion, believed that the gods saw everything that was done.

Mr. H. H. Statham rose to propose a vote of thanks to Dr. Dresser for his interesting lecture. He did this with the greater pleasure as he had spent several hours with Dr. Dresser, looking over his photographs and inspecting many of the interesting objects for which the Association had been unable to find room. One thing which had particularly struck him was the remarkable way in which the Japanese made use of the products of nature close to their hand. Whatever was round about them they seemed to lay hold of, turning it to the best artistic use, and putting upon it a finish which was most extraordinary. They showed an example of thoroughness and painstaking which was difficult to find in any other art of the present day. One or two of the objects he had looked at reminded him of a very excellent sentence of John Stuart Mill's, who said that if he were asked to define art he would term it the endeavour after perfect execution. If a man had done a thing in the very best possible manner, although a less complete way would have answered for practical purposes, that man had worked as an artist. Dr. Dresser had shown him a minute butterfly-cage, bound round with little tie-pieces of bamboo, turned round, cut, and joined, and had defied him to tell where the joint was. This was a most extraordinary instance of perfection in workmanship, for the sole purpose of doing it well. On the other hand, there was something curious and extravagant in the manner in which the Japanese artist had got up the coloured drawings. These were intended purely to show the construction and method of decoration, but the painter could not be satisfied with simply doing that. He could not see a column going up one side of his paper without putting in something perfectly irrelevant for the purpose of balancing the work. That showed a sort of illogical mind, and appeared to be the one defect in Japanese art, with all its beauty, its finish, and its exquisite fancy. It was not the logic which belonged to Greek art; and was hardly a thing for people to be always imitating. Ornament should have some connexion with the member in which it was placed, and the position in which it was. Dr. Dresser had called attention to this in bringing forward the coloured ornament with the diaper on the beam so exactly fitted to it. He was bound to notice the lecturer's little reference to the *Builder*. The water decoration upon the walls of the Natural History Museum at South Kensington was, he believed, put in the Fish Museum, as symbolical. All ornament ought to have a meaning, and if the Japanese water ornament was in a fish museum it would be excellent; otherwise it had no meaning. A column was a thing to support a weight, and should be made to look as strong as possible. The Greek artist did this, by fluting it up vertically, to give it nerve and sinew, while the Japanese artist amused himself by drawing water-lines upon it; therefore, the Japanese artist made a mistake in that way. Mr. Waterhouse, or whoever did the decoration at South Kensington, seemed to have wished to emphasise the fact that it was a fish museum. He (Mr. Statham) could see no reason for water on the Japanese column, and until he could he would maintain he was right.

Mr. Osborne Smith remarked that the wave-like marks upon the piers at South Kensington were not in the Fish Gallery.*

Mr. Stannus thought that the decoration of water might have had its rise through a poetic and imaginative people owing so much of their safety to columns going down into the water. Mr. Statham had referred to the want of logical ornament; there was also a want of reticence in Japanese ornamentation. The Japanese artist never knew where to hold his hand, whereas the Greeks put the ornament in its proper place. This temperance, as he might term it, was a virtue which was lacking in Japanese art, lovely and interesting as it was. He had much pleasure in seconding the vote of thanks to Dr. Dresser.

Mr. Burrows inquired if the Japanese went in for quarrying at all? Also if the central staff of the pagoda was free?

Mr. A. B. Pite remarked that Mr. Stannus's idea of the derivation of the water-decoration was a charming one, but, at the same time, slightly far-fetched. As to the application of ornament, Dr. Dresser had already said that architectural style was not only influenced by people and climate, but also by material. It would not do, therefore, to judge Japanese wood-work by the same rules of decoration and support which would apply to the marble architecture of Greece and the granite architecture of Egypt. They could not apply the European orders of architecture to the Buddhist element, which was beyond the pale of modern civilisation, and, until some wonderful being had compiled a grammar of the whole thing, they would not be able to apply any rules of logic to it.

Mr. H. D. Appleton (hon. sec.) wished to know whether the Japanese prepared plans for the erection of their buildings at the present day.

The vote of thanks having been carried by acclamation,

Dr. Dresser, in replying, said that when Mr. Waterhouse designed the water-columns, which were both pretty and piquant, it had not been settled which rooms were to be devoted to the different classes of creatures. He contended that nothing had been said about beauty and appropriateness in the *Builder*. As to appropriateness, the water was not a general decoration in the case of columns. The temple in which he had seen it had been, he believed, dedicated to the fish god, hence they would see the appropriateness at once. He had no knowledge of quarrying taking place in Japan. Some of the stones used in the construction of the large castles had been brought over 200 miles, and the curious thing was how this had been done when there were no roads. The central rod of the pagoda was absolutely free, with a considerable space round it. The Japanese plans for the temples and large buildings were carefully drawn. They drew elevations, but put in little bits of perspective to help them out.

Art Union of London.—The Art Union have sent us an impression of the line-engraving by Mr. Willmore, from Mr. Brierley's picture of the "Attack of the *Vanguard* on the Starboard Wing of the Spanish Armada." The work, which is the print for 1885, is a spirited one, and Mr. Brierley has studied the historical aspect of the subject thoroughly; but it has the old fault of being over large, as are most of the engravings issued.

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* See *Builder*, Nov. 25, 1882.

* The fact that the specimens were not ultimately deposited in accordance with what appeared to have been the original intention does not much affect the argument. But it is odd that *all* the speakers seem for the moment to have forgotten the essential distinction between the two cases: the visible surfaces in Mr. Waterhouse's building are only an ornamental fire-proof terra-cotta screen for the iron columns. The parallel case would be, if the terra-cotta screen were removed, and the *iron column and girder* painted over with conventional water. That we should call an absurd style of architectural decoration, whether it were done in England or Japan. The treatment of a mere screen surface does not strike the eye as absurd in the same way, though we are not particularly concerned to defend it.—Ed.

A CASTLE SKETCH.

WITH what sublime indifference and superiority does not the material man for the most part regard the antiquary! To him walls are a mere patchwork of bricks and plaster, and arches mere heaps of stone piled together in certain conventional shapes. A Saxon window has no charms for him, and the mystic B. S. H. M. is in his eyes a cypher, and nothing more. He cares for none of the enjoyments that spring from even the most superficial study of history, architecture, or natural surroundings; his thoughts are centred, perhaps, on a dinner prospect, or, more probably, on the self-satisfaction which he feels at having seen something, though what that something is it matters little.

The antiquary's spectacles, again, are often the subject of derision; not only are they charged with possessing a pinkish hue, but even of being tinted with that brighest of all colours,—imagination. Still, what an additional amount of pleasure do they not bestow upon their wearer! They should, indeed, rather be said to consist of that sombre and dignified dark glass through which things are to be seen steadily, in their true aspect, and without the glare and dazzle of deceiving sunlight. Many an old building may be seen to advantage through them; for they not only facilitate a sketch of its contour, but are of immense use in reading the history and true life of the most ancient pile of bricks and mortar, and in imagining its past scenes and surroundings.

Of all the Welsh castles to which the antiquary's glasses may be applied with the greatest advantage, Carnarvon is the most imposing and the most worthy a sketch, whether mental, or pictorial, or descriptive. There is so much to think about when we look at this mass of masonry surrounded by a glorious landscape, and rich with the legends of bards and warriors. A thought is but a sketch, and where the one is tossed off into the sketch-book or on to the canvas, the other is painted, with the colours of impression, on the mind: so that the genuine antiquary, who should have in him a touch of the poet and the artist as well as of the historian and the old-world lover, will have before him as good an opportunity for the contemplation of the landscapes of art and the vistas of history, as of the angles of architecture and the mazes of romance.

Viewed from various points,—from the streets of the town itself, from the shore, and from the Menai Straits,—the fortress of the Arvon presents an equally grand appearance. Externally in a most complete state, its ramparts and walls, with many towers and turrets, look as if they still had some of those duties to perform for which they were originally intended. To take in the idea of the size of the building and the extent of ground it covers, a walk around its base, down the street that leads to the quay, and then round the north side of the building, is sufficient. Though not possessing as much grace as Conway Castle, and deprived of as favourable a situation, it nevertheless surpasses it in stateliness, and may be taken as the best specimen of the Edwardian style of Gothic. The great difficulty in a building of this kind,—the difficulty of giving beauty to massiveness, and useful decoration to so strong and vast a piece of military architecture,—has been overcome in a masterly manner by the pentagonal, hexagonal, and octagonal turrets that surmount its towers, and by the irregularity of its plan, as well as by the grace of its windows, whose form, among many other things, was, no doubt, suggested to Edward I., its founder, on his travels to the Holy Land, where he much admired the castles of other countries, and brought home fresh ideas which found expression in the building of such fortresses as Beaumaris, Conway, Harlech, and Carnarvon.

Turning from the contemplation of the larger effects, to a sketch of the more prominent and noteworthy of the isolated bits for which the castle is famed, we might take, for instance, the Eagle Tower, which our friend the antiquary would select at once as the most prominent feature of the building, and the most interesting point in his series of sketches. Viewed from the quay, it is to be seen to the best advantage; and the skill with which the architect has made such a mass of square stone appear light and graceful is especially to be admired. This lightness is due to the three angular turrets that rise from the summit of the towers, and to the little statues of eagles that are placed here and there on the parapet, and give their name to the edifice. Below, at its foot, is a small watergate, and, breaking the line of square-cut stones that runs from the summit to the base of one of the angles, is a small group of fisher hamlets built up against the wall. On the ramparts are the stone heads of cross-bowmen, that look as if they were peeping over the parapets: a strange device for misleading enemies, and a detail in the building which, though strikingly out of place amid the dignity of its other surroundings, still recalls forcibly the character of the man who placed them there,—a character in which sublimity of soul was blent with the cunning of the fox. Then, again, there is the Queen Eleanor's Gate, a handsome circular arch, which used, in all probability, to serve as an entrance or postern to some drawbridge, connecting this portion of the castle with a row of outworks. It is seen at its best some distance off on the other side of the water, from which we also get a view of the expanse of the whole southern side of the building. This is the favourite view of Carnarvon Castle, and the one most aptly chosen by artists as conveying the best impression as well of the beauty and lightness as of the massiveness and strength of the building. Among its rows of towers, pierced with small long windows and outlets, the Eleanor's Gate shows with wonderful effect on the eastern side, and seems to spring straight from the ground and rise to within some 20 ft. or 30 ft. from the summit of the tower.

The series of mental sketches that spring from the contemplation of these different points is almost as varied as the string of natural details and art adornments that surround the building. We think of Edward the "Longshanks"; of his conquest of Wales; of the pride and valour of the conquered Welsh, whose devoted historians even to this day insist on tracing the pedigree of Victoria through Lewellyn the Great, Constantine the Great, Lud, King Lear, through Æneas of Troy, Jupiter, Saturn, and Uranus, to Gomer, Japhet, and Noah, the forefathers of the Cymry. We think of the beloved Eleanor in whose honour the gate is named, how she visited Carnarvon when the castle was being built, and of the cunning fraud of the king, who held his baby up before the Welsh princes, presenting to them a lord who was born in Wales, who was innocent of all treason, and who could not speak a word of English. Then, again, we glance at the tower on our left,—the Dungeon Tower,—where the redoubted author of the "Histrio-Mastrix" was confined by the bigotry of Laud and Charles I., and whence he was borne amid the joy of vast multitudes, to London on the triumph of the Parliament, with the "stigmata Laudis" branded on his cheeks. Or another historical side-light shows us the last of the Welsh heroes, so hardly handled by Shakspeare,—Owen Glendower, for the last time calling to arms the hardy mountaineers of Wales, and by the fire of his eloquence and the greatness of his boasts igniting again the slumbering embers of hatred against the Saxon.

The portion of the castle, however, which, from its structure, gave rise to the greatest amount of ill-feeling in the hearts of the conquered nation was probably the entrance tower; and whereas in former days the Welsh people made the statue of Edward I., which surmounts the gateway, the object of their hatred and their theme for calling each other to arms, so in our own times, now that the expression of the statue has faded, and the meaning of its position been defaced by age, the Welsh antiquaries keep up the quarrel with one another as to whether the king is triumphant or menacing, gentle or conciliatory. But even if the features are somewhat faded by age, the rest of the grand entrance remains complete, and the work of Henri de Elreton is here to be seen at its best. Dallaway, who affirms that this portion of the castle is the most handsome structure of the age of Edward in the kingdom, describes it as "at least 100 ft. high; and the gateway, of very remarkable depth, is formed by a succession of ribbed arches, sharply pointed."

So we may wander on, recalling picture after picture, and jotting down sketch after sketch: whether it be a fragment of an arch shrouded by drapery of trailing creeper, or the relic of an old stone eagle, famous for the quarrels of antiquaries; whether it be wandering through old halls of which the walls have long crumbled; or climbing upon the ramparts and among the towers to see below us the life of to-day. On the summit of the Eagle towers we see beneath us the lovely land of Wales; before us, the Menai Straits and the Isle of Anglesea; to the north-east lies Bangor; and to the south, as far as eye can reach, rise the lofty peaks of Snowdon and Moel Shabod, with the noble range of hills and valleys that surround them,—lands rich with song and the wealth of overflowing romance; while just beneath, at the foot of the castle, are a number of noisy school children let out from work, playing among the sand and stones, and paddling with their little bare feet in the water. And then, somehow, there springs up another thought, suggested by the words of Mr. Ruskin in one of the late numbers of "Fors Clavigera," concerning an incident at the school of Coniston. "And now, suppose," he says, "that there were any squires' sons or daughters down here for Christmas, from Christchurch or Girton, who could and would accurately and explicitly tell these children 'all about' the Queen's arms; what the Irish harp meant, and what a bard was, and ought to be; what the Scottish lion meant, and how he got caged by the tressure of Charlemagne, and who Charlemagne was; what the English leopards meant, and who the Black Prince was, and how he reigned in Aquitaine; would not all this be more useful, in all true sense, to the children, than being able, in two seconds quicker than the children outside, to say how much twenty-seven pounds of bacon comes to at 9¼d. a pound?"

PROPOSED NEW STREET FROM GRAY'S INN ROAD TO ST. JOHN'S STREET ROAD.

THE proposed new street from Gray's Inn-road to St. John's-street-road for which plans have been deposited by the Metropolitan Board of Works will start from a point in Gray's Inn-road, opposite Theobald's-road, and will be carried in a curved direction through Warner-street and Coldbath-square to Farringdon-road at the junction of that road with Exmouth-street and the highest part of Mount Pleasant. The valley between Vine-street and Coldbath-square will be bridged by a viaduct about 150 yards long and about 26 ft. high at the highest part. Tothill-street, Vine-street, the south side of Coldbath-square, together with some other smaller streets will be stopped up. The salient angle of the Middlesex House of Correction at the corner of Farringdon-road and Mount Pleasant is proposed to be rounded off in order to improve the entrance into Farringdon-road from the new street. From Farringdon-road the road is carried by a short curve to John-street, which will be widened on its east side. From John-street the road is carried across Tysoe-street and Rosaman-street into Garnault-place, and thence in front of the New River Company's Offices to Sadler's Wells Theatre, which it passes on the eastern side. The new street will absorb the Myddleton's Head public-house and Deacon's Music Hall adjoining, both of which are included within the limits of deviation. The new street will terminate in St. John's-street-road, opposite the Clown public-house, a short distance to the westward of Owen's-row. The roadway will follow the course of the New River for a length of about 100 yards to the westward of St. John's-street-road.

The whole of the open space in front of the New River Company's offices, Lloyd's-row, is included within the limits of deviation, and will in all probability be absorbed for building purposes in order to recoup some portion of the expense of forming the street. Clerkenwell is a poor and densely-populated neighbourhood, with but few open spaces, and it is perhaps not asking too much that if this space is acquired by the Board it should be planted and dedicated to the public. The street is throughout of a utilitarian character, no attempt being made to give it anything approaching a monumental appearance, and such an opportunity as is presented by the occurrence of this open space in the line of the proposed new street should not be thrown away. It is perhaps too much to hope that the New River Company's buildings should be set back and a *place* or turning-place formed in the middle of the street; but this would certainly be done in any other capital in Europe, and the poverty of the neighbourhood would be held to be a justification for such an expenditure rather than the reverse.

The street at its southern end will be carried

on a viaduct, the inclination of the roadway for this portion of its course being at the rate of 1 in 503, which appears to be satisfactory; but for a short distance, namely, between Mount Pleasant and Great Bath-street, the inclination on cross section is 1 in 20. The present inclination is, however, 1 in 14, and this alteration must be looked upon as an improvement. Between Farringdon-road and St. John's-street-road the new street closely follows the present surface-levels.

The old bathhouse or bagnio in the centre of Coldbath-square will be destroyed by the formation of the new street; the bath is ancient, but the premises are not interesting except from a topographical point of view. Myddleton's Head and Deacon's Music Hall mark the site of a tea-garden much frequented by the fashionable world in Charles II.'s time. It is alluded to by Pepys, and a portion of the house attached to the gardens is shown in the background of Hogarth's "Evening," in the series of engravings entitled the "Times of the Day."

The street crosses Rosaman-street a short distance to the westward of Clerkenwell Vestry-hall, but the hall is not included within the limits of deviation shown upon the deposited plan.

The improvement which will be effected by the new street in the means of communication between Holborn, Clerkenwell, and Islington, is one which has long been urgently demanded on grounds of absolute necessity, and its execution has been frequently urged in our columns. The existing route *vid* Elm-street and Mount Pleasant is both steep and tortuous.

RAILWAYS IN ASIA MINOR.

That Asia Minor is destined sooner or later to become a field for railway enterprise there can be little doubt. Now that the continent of Europe has been covered with a network of railways, and the benefits consequent upon such means of intercommunication have been practically proved by the material progress of those countries, where they have been judiciously carried out, and now that in India also the railway system has been so largely extended that the extremest limits from North to South, and from East to West have been bound together, it would certainly seem as if the time had arrived when the countries which intervene between Europe and the Far East can no longer continue to remain isolated. Hence railways in Asia Minor have of late been more prominently brought before the capitalists of this country. For many years past it has been the dream of the more enthusiastic among railway projectors to connect Europe with India by the Euphrates Valley route, but that project has scarcely gone beyond the region of dreams. As usual in such questions, distinguished men are found ranged on opposite sides. Possibly in the distant future it may be found expedient to connect the extreme points whenever the intervening countries have advanced to the requisite stage of civilisation, and become themselves sufficiently developed to require being linked one with another, and with the greater world beyond them. As a first stage towards that end, the construction of local lines from the coast into the interior, so as to afford a cheaper and more expeditious mode of transit than at present exists, is a step in the right direction, and therefore, the scheme of the Mersina-Tarsus and Adana Railway, to promote the furtherance of which a meeting was, with the Duke of Sutherland's permission, held at Stafford House last Saturday, may be deserving of the attention of English capitalists. The meeting was well attended, and several distinguished men from the various classes of society responded to the invitations which were issued by the promoters. The speakers who moved and seconded the resolutions were, as a matter of course, advocates, not only of the particular project, but also of the more ambitious and extended scheme above alluded to, and as no one rose to call in question the views propounded, it is to be inferred that the measure met with general concurrence. One voice was, however, raised in doubt of the fiscal arrangement by which the promoters of the Mersina-Tarsus-Adana railway have been induced to lay it before the public. To say the least, the mode in which the capital is sought to be raised is entirely novel, so much so that the gentleman in question was doubtful of the possibility of the scheme ever realising a quotation on the Stock Exchange. The "Short Statement" with which it is introduced certainly required the special explanation devoted to it, in order to clear up the seeming intricacy in which it is involved. It may be briefly described as a company within a company, "for inside the railway company," which "has been authorised by a firman of the Imperial Ottoman Government," there is to be a "Construction Company, Limited," with a capital of 95,000*l.* A shares (without voting powers), 8,250*l.* B shares (with voting powers), with 165,000*l.* six-per-cent. First Mortgage Bonds," and which is to "subscribe for all the shares of the railway company, to procure and pay for the assignment of the concession, and to construct and equip the railway for 165,000*l.* in cash, and all the 165,000*l.* First Mortgage Bonds of the railway company." In return for this, "for each 100*l.* now subscribed, the subscriber is ultimately to receive:—

£100 six-per-cent. First Mortgage Bonds.....	£6	0	0
40 in shares commencing at nine per cent..	3	12	0
£140, yielding per annum	£9	12	0

And, in addition, a share in the distribution of the final assets.

With the prospect of such a return there ought not to be any difficulty in procuring the requisite funds. Indeed, it is not clear why, with the probability of such ample returns for the investment, so circuitous a method of raising the capital should be resorted to. The proposed railway is 42 miles in length without, it is said, any serious engineering difficulty to encounter, while the existing local traffic is stated to be sufficient to insure its commercial success.

Illustrations.

JAPANESE CARVED FRIEZES.

These are from photographs which were exhibited at Dr. Dresser's lecture at the Architectural Association, and were lent us by him for the purpose of illustration. They are examples of the exquisite wood-carving which is frequently to be found occupying the space which answers to the frieze in Western buildings, as far as anything in Japanese architecture can be said to answer to anything in Western architecture. They are, as will be seen, open in some places. Some of these partially open-work friezes are found carved so as to give different subjects on the two sides, as in the open carving which adorns the crooks of some Mediæval crosiers.

JAPANESE ENTABLATURE AND PART OF COLUMN.

This profusely-decorated piece of modern construction is, in the original, a blaze of gold and colour, of which the black and white drawing here necessarily conveys only an imperfect illustration. The construction is, a circular post carrying a joist placed on edge (the lowest member of the entablature) supporting a tolerably thick beam placed on the flat and diapered, as shown; then a cross-head construction of brackets carrying two more beams, with blocks between them in bracket form. It must be observed that the half shield and the floral ornaments straggling about between the upper and lower beams do not exist at all in the building, but were put in by the Japanese artist who made the drawing to fill up the blank space on the paper: a thoroughly Japanese idea.

The top portion of the column shows the survival in permanent form of an ornament originally derived from drapery hangings. The round part and the lower joist are painted over with a conventional imitation of water,—a characteristic whim worth illustrating, but utterly unsuitable for its position as architectural decoration.

DETAILS FROM THE CHURCH OF LA MADELEINE, VÉZELAY.

These drawings, which, like those published last week, are made by M. Adolphe Guillon, show another of the boss-carvings of the ancient sacristy, and a fragment of carved ornament, in which we can almost see the transition from Classic to Gothic foliage, in actual progress or growth.

TOKIO UNIVERSITY, JAPAN.

The erection of this building was commenced in 1879 for the Japanese Government, from the designs, and under the superintendence, of Mr. Josiah Conder, architect to the Japanese Government, and the building has proceeded in blocks. The immense area of the building, as well as the necessity of erecting only portions at one time, required the dividing up into these blocks, as will be seen from the plan. The scheme for the entire university includes theoretical and technical sections. In the former are included law, literature, language. In the latter, geology, mineralogy, metallurgy, biology, botany, mathematics, physics, civil and mechanical engineering, architecture, astronomy; with museums, libraries, lecture-hall, and laboratories. It is proposed also to add at some future time a medical school, with a small hospital. The central portion forms the administrative block, and the various sections are placed with a view to the best aspect for each, and convenience of their proximity to kindred sections having classes in common.

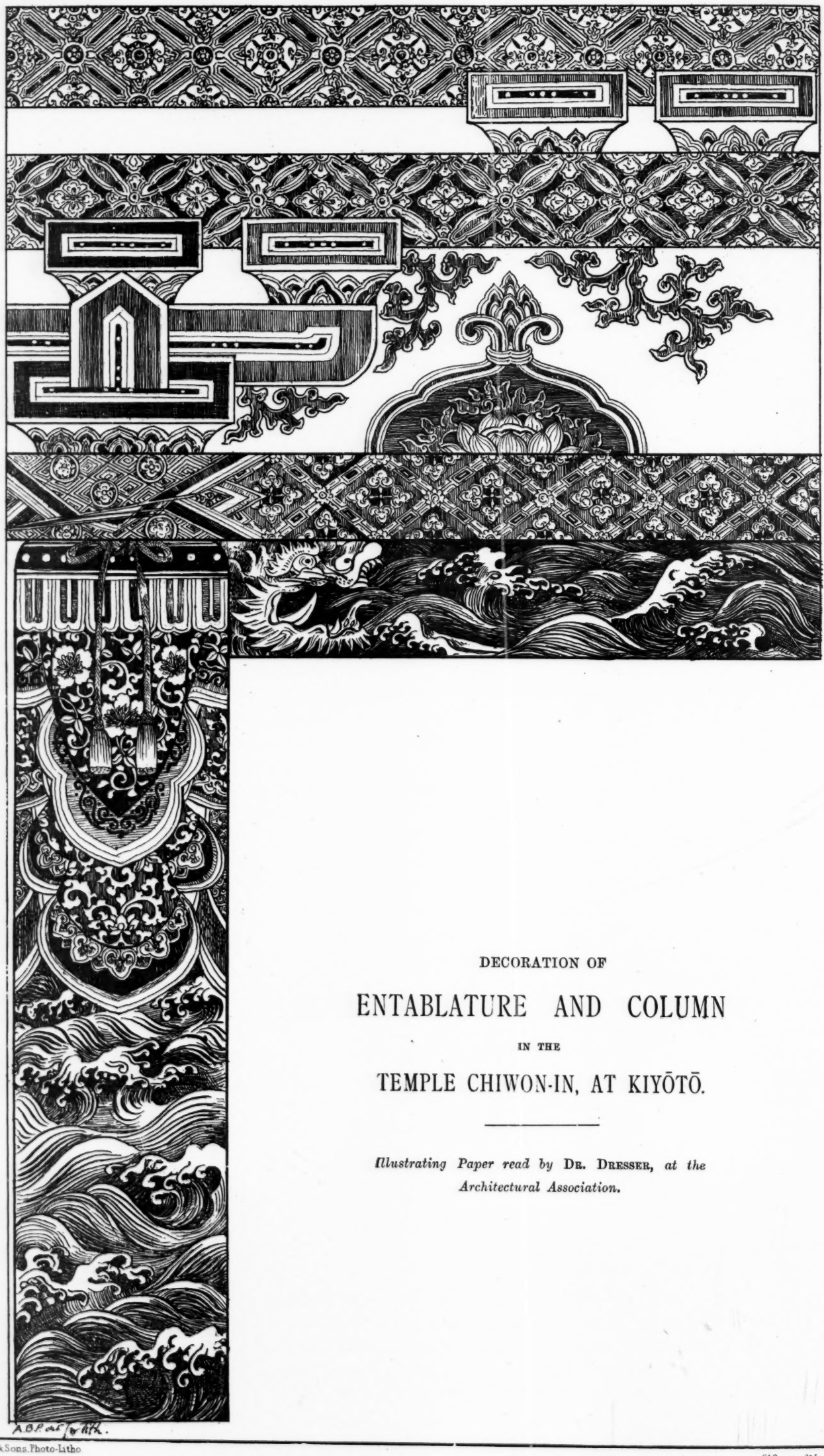
Of the two end towers, one forms an astronomical observatory, and the other it is intended to use for physical experiments with pendula or weights, requiring a considerable height. The buildings are in brick, with stone dressings. The style is Early Gothic, but the details have, where possible, without incongruity, been infused with a Japanese spirit, more especially in the internal architecture and fittings. The great difficulty that a European architect has to contend with in attempting to imbue brick and stone buildings in Japan with the spirit of the native architecture is that, throughout the entire country, the architecture is wooden; every quaint form, such as the bracketing under the eaves and on posts, attenuated lintels, supports, &c., are entirely illogical, weak, and meaningless translated into a stone or brick or other solid material. The only constructively decorative forms at all compatible with an arcuated style, such as is necessary in building in brick or stone, are in certain ogee-curved panels and window openings. With regard to decoration pure and simple, such as carving, casting in bronze, mural and ceiling decoration, carved and pierced panels, diapers, &c., the whole spirit of such work is in keeping with the works in Europe in the Middle Ages. The conventional treatment of foliage much resembles the Early Gothic and Late Romanesque.

In addition to the difficulty of transferring wooden features to a harder material, there is in Japan the still greater difficulty to be met of the frequent and oftentimes severe earthquakes that occur there, a difficulty that naturally makes an architect look to iron construction as one most likely to serve him; but the Japanese authorities have not as yet taken kindly to the idea, although this mode of construction would undoubtedly enable an architect to more fully interpret the Japanese architectural spirit.

STABLES, SWARLAND HALL, AND ENTRANCE OF A HOUSE AT BEDFORD PARK.

These illustrations are reproductions of sketches in this year's Royal Academy. The part of the stabling shown in the first drawing is entirely new; the rest, forming a large court-yard, are old buildings remodelled and very much altered. The new buildings have been built with a rich buff-coloured stone quarried on the estate. The house at Bedford Park, of which part of the front is shown, was completed early last year. E. J. May.

Brick-making in Queensland.—The *Brisbane Courier*, of September 27th, contains an account of the proceedings at the formal opening of the works of the Queensland Brick and Tile-making Company (Limited), near Brisbane. The brick-making industry had, says our contemporary, been previously carried on in the colony under conditions which seriously impeded its progress. Now, however, they are to be manufactured in a style hitherto unknown in the colony, and on the most approved scientific principles. The machinery selected was the Plastic brick machine of Messrs. Bennett & Sayer, of Derby, which has been fitted up in a shed measuring 56 ft. by 80 ft., and turns out from 15,000 to 16,000 bricks per day of eight hours.



DECORATION OF

ENTABLATURE AND COLUMN

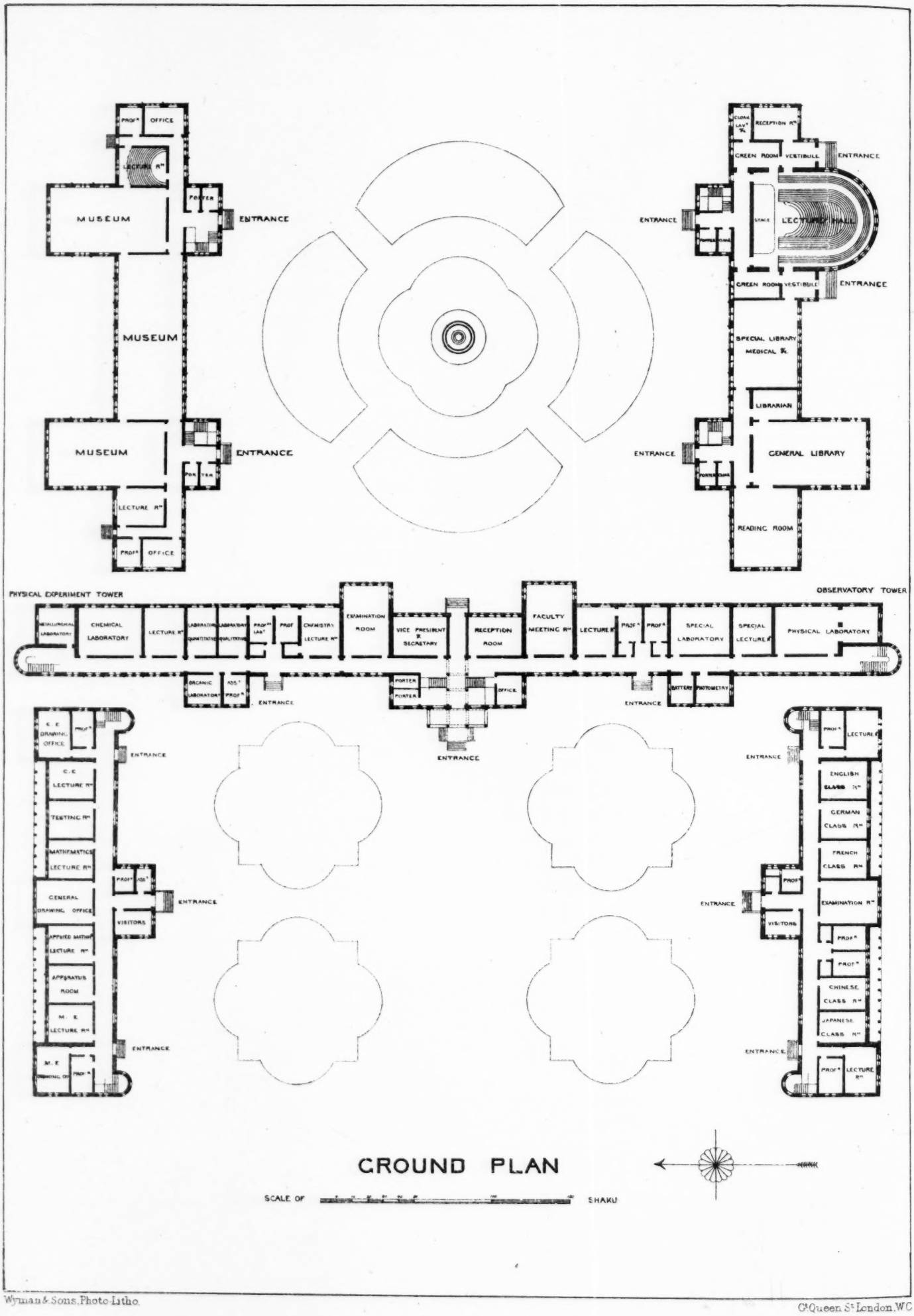
IN THE

TEMPLE CHIWON-IN, AT KIYŌTŌ.

Illustrating Paper read by DR. DRESSER, *at the Architectural Association.*

Wyman & Sons, Photo-Litho

54 Queen St London, W.C.



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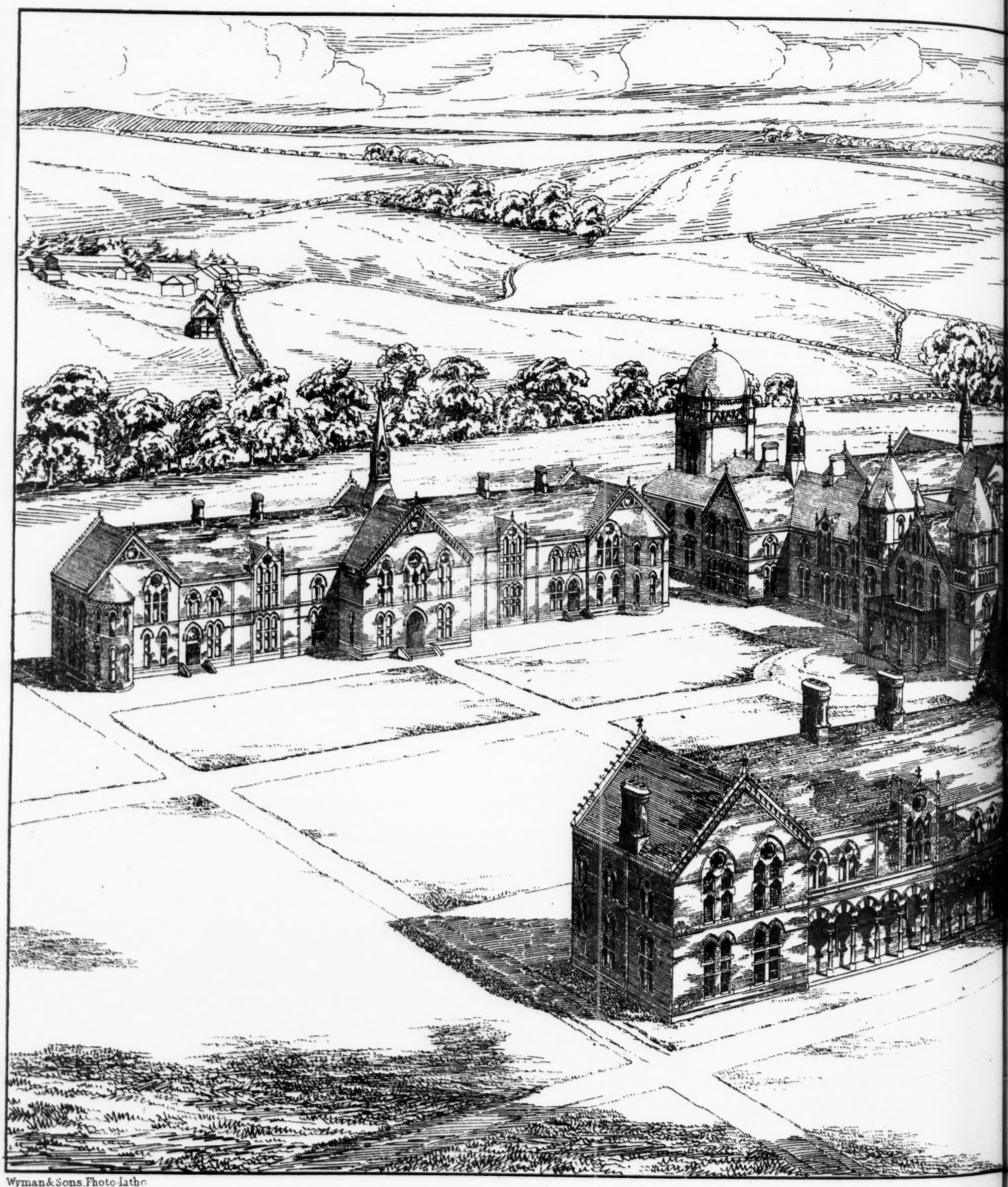
TOKIO UNIVERSITY, JAPAN.——Mr. Josiah Conder, Architect.



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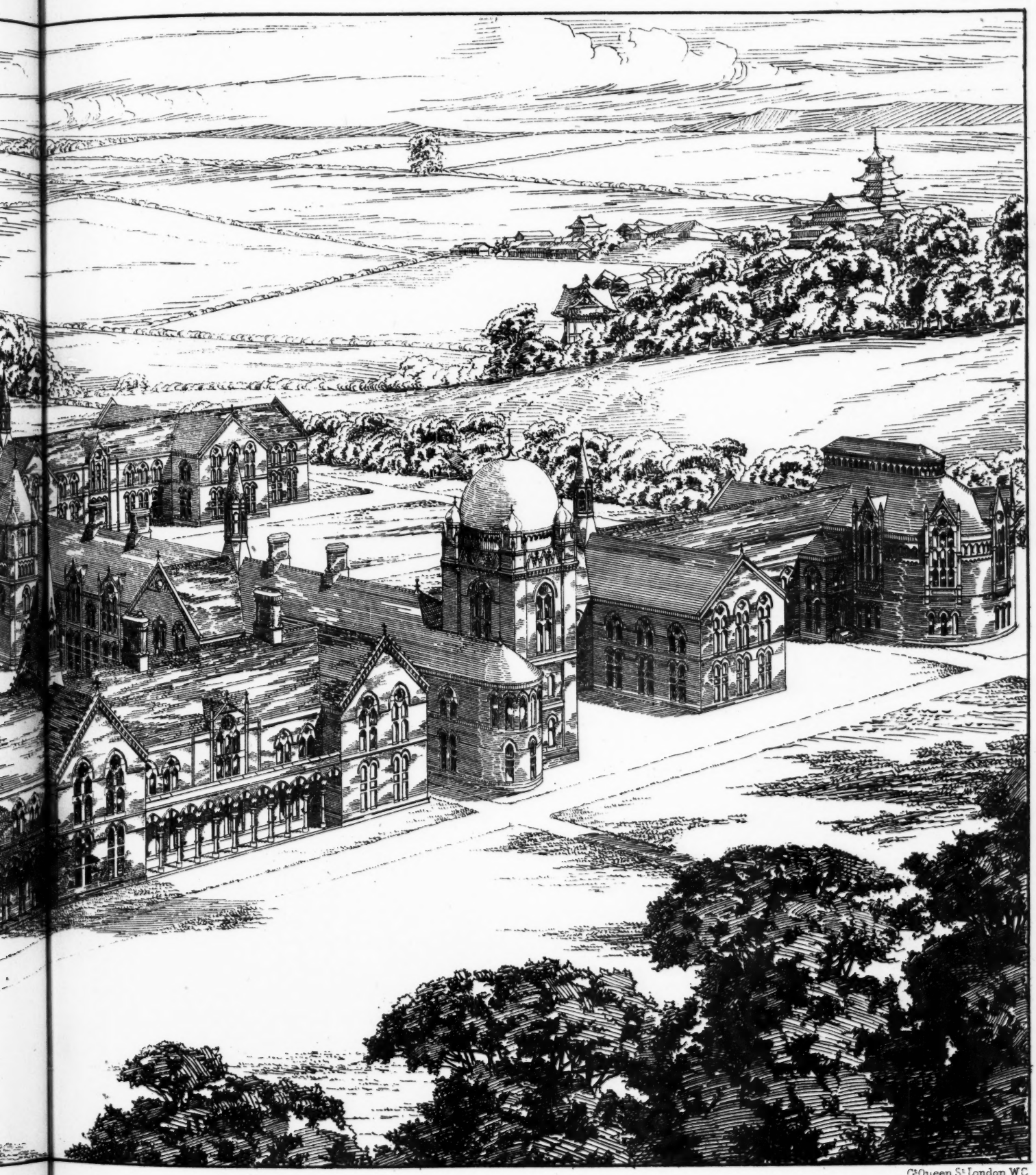

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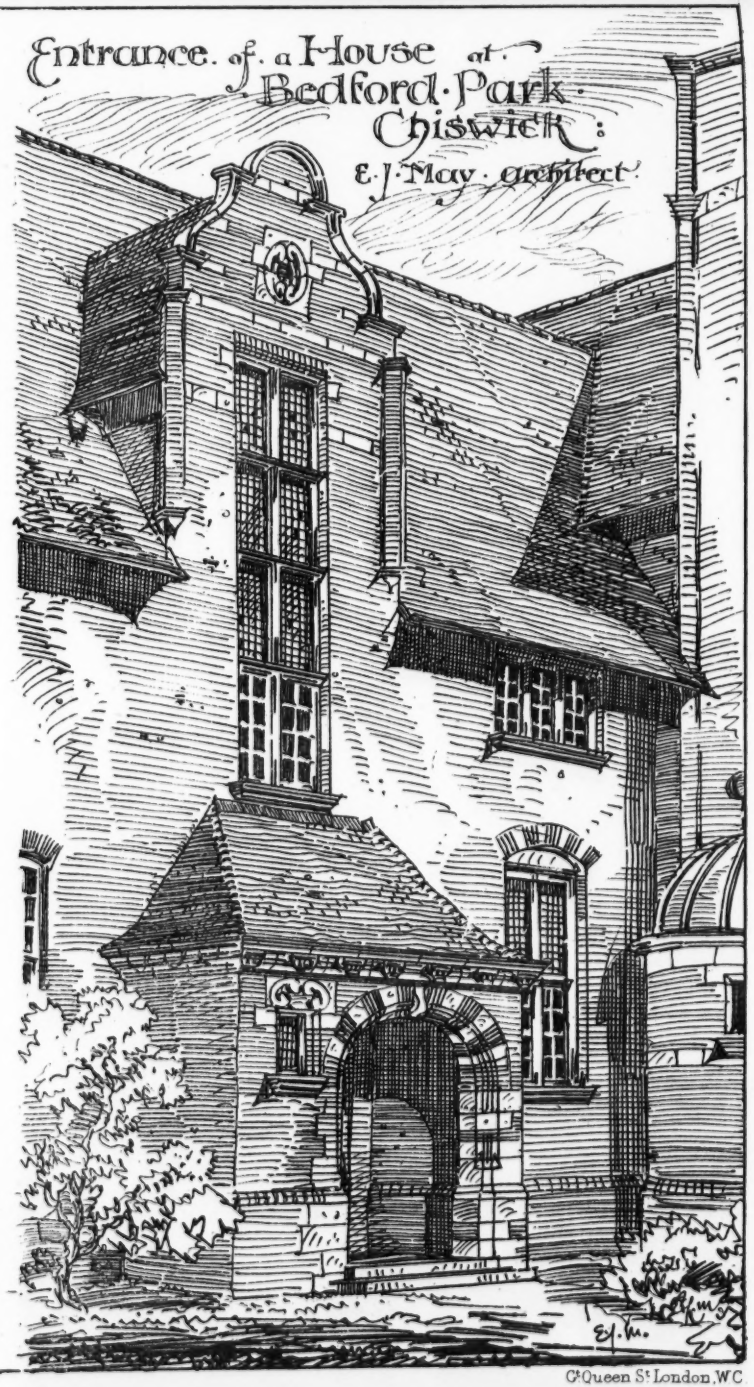
APAN.—Mr. Josiah Conder, Architect.

SWARLAND HALL NORTHUMBERLAND: STABLE Buildgs

Entrance of a House at Bedford Park Chiswick: E. J. May architect



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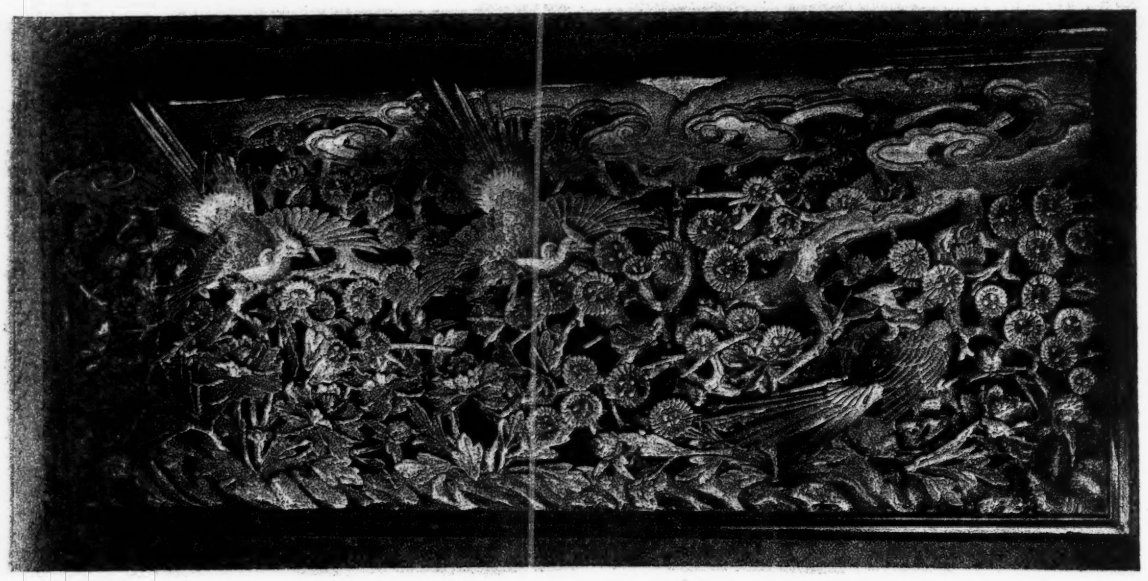

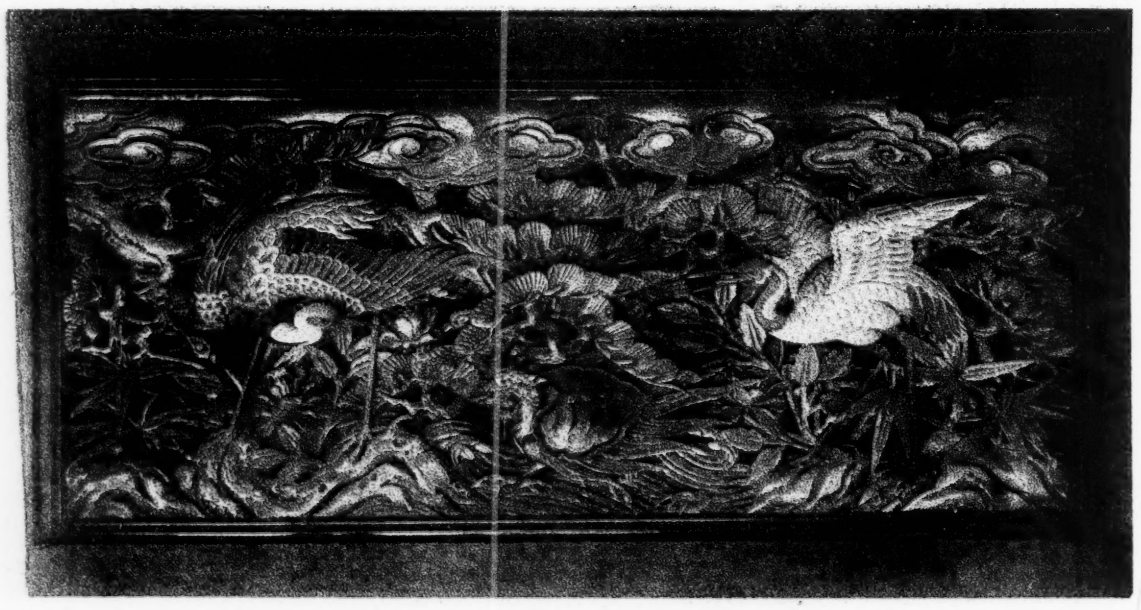

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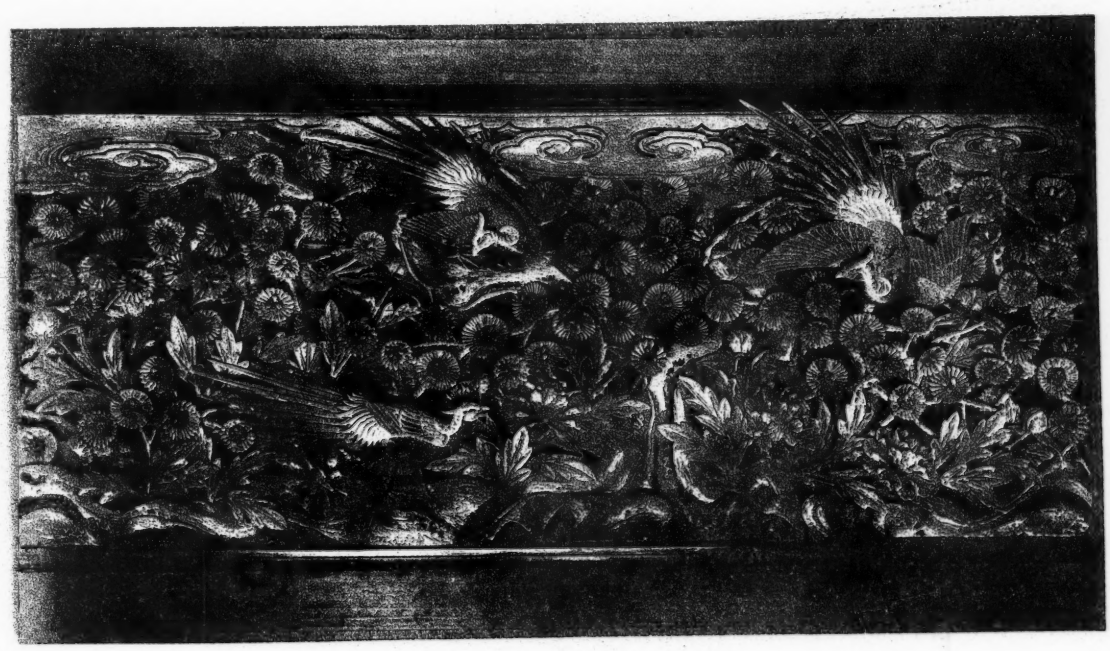
JAPANESE CARVED FRIEZES.

ILLUSTRATING PAPER READ BY DR. CHRIS. DRESSER, Ph.D., AT THE ARCHITECTURAL ASSOCIATION.



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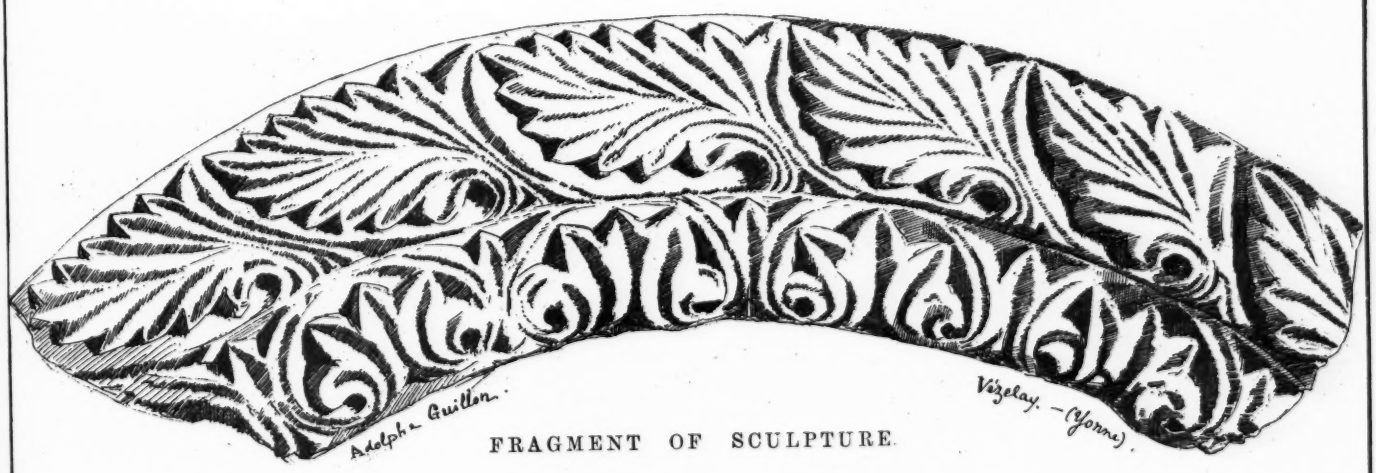
JAPANESE CARVED FRIEZES.

ILLUSTRATING PAPER READ BY DR. CHRIS. DRESSER, Ph.D., AT THE ARCHITECTURAL ASSOCIATION.

KEYSTONE FROM THE VAULT OF THE ANCIENT SACRISTY.



FRAGMENT OF SCULPTURE.

DETAILS FROM THE CHURCH OF LA MADELEINE, VÉZELAY.

DRAWN BY M. ADOLPHE GUILLON.

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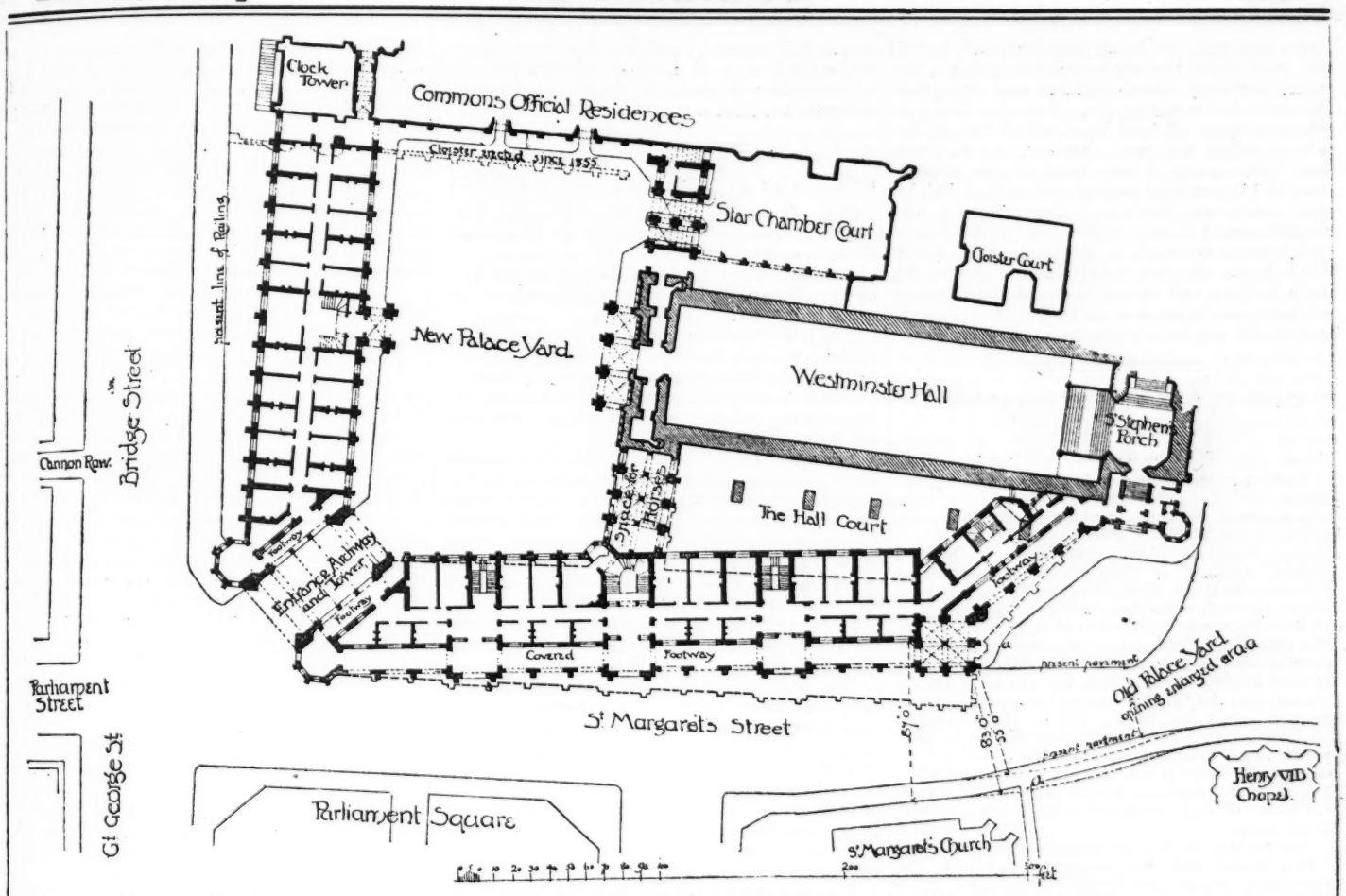

Sir Charles Barry's Plan for the Completion of the Palace of Westminster, as modified by Mr. C. Barry.

THE WESTMINSTER HALL QUESTION.

THE accompanying plan shows Sir Charles Barry's scheme for completing the Houses of Parliament, in the slightly modified form submitted by Mr. Charles Barry to the Westminster Hall Committee. We subjoin Mr. Barry's memoranda on the subject:—

"It having been suggested that, in order to carry out Sir Charles Barry's plan of 1855 for a suitable completion of the new Palace at Westminster by a block of new buildings at the east side of St. Margaret's-street would unduly narrow the roadway between it and St. Margaret's Church, Mr. Charles Barry, at the request of one of the members of the Committee, has prepared a plan showing that, by a slight receding of the line of the proposed façade at the south end only, a width, for carriageway and footways, of 83 ft., can readily be provided, which is deemed ample for all possible requirements. This can be done without reducing the court which would intervene between the back of the new buildings and the west front of Westminster Hall to any damaging extent. All the old buttresses, except the southern one (which would be incorporated in the new building) would be preserved, and there would be no difficulty in erecting along the lower part of the west side of Westminster Hall such a cloister or gallery as would preserve the Norman wall there from injury by weather; and as this would not be seen, except from the court-yard, it may be built at moderate cost, without pretending to be a restoration of the old building there, for which there is really not sufficient authority. Such cloister or gallery would, moreover, form a useful passage of communication between the new buildings (proposed by Sir Charles Barry) at St. Stephen's Porch and the new building (also proposed by him, and part of his plan of 1855), completing the façade to New Palace Yard on its south side, of which the gable or raised towers of Westminster Hall would form the most important feature.

The cloister or gallery would, of course, be one story only in height, and in no way interfere prejudicially with light and air in the proposed new court, called in Sir Charles Barry's plan 'The Hall Court.'

It may be mentioned that the width of the carriage-way east of St. Margaret's Church is here (exclusive of footways) only 37 ft. 3 in., whereas by the modified plan, proposed by Mr. Charles Barry, it would be 55 ft."

THE ENLARGEMENT OF MIDDLESEX HOSPITAL.

THE new wing to the Middlesex Hospital, which has for some time past been in course of construction, is now completed, and is intended to be formally opened on Tuesday next by the Princess Christian. The object of the extension has been to provide additional accommodation for the out-patients, and, at the same time, to increase the residential accommodation for the medical staff, nurses, and domestics. The new wing has been erected on the east side of the quadrangle, having three frontages, one within the quadrangle, another in Mortimer-street, and a return frontage in Cleveland-street. The principal frontage is that in Mortimer-street, which is 52 ft. in length, and 48 ft. in height, containing four floors and a basement. The elevation is faced with Portland cement, the ground-floor portion as well as the angles from the street level to the cornice being in rusticated work. The return frontage in Cleveland-street is carried to a depth of 87 ft., of which 18 ft. is faced with Portland cement, and otherwise uniform with the Mortimer-street elevation. The remaining portion of this frontage is faced with stock brick and red brick bands and dressings. The new buildings cover a ground area of about 4,500 superficial feet. The entrance to the buildings for patients is by a newly-erected porchway on the east side of the quadrangle, and here it should be observed that that portion of the old building on the north-east side of the quadrangle has, to a great extent, been rebuilt and re-modelled. The entrance leads into a corridor, 7 ft. in width, with several other corridors of similar width at right angles, the floors of the whole of these corridors, together with several narrower passages, being in mosaic, whilst the walls are faced with buff and white glazed brick. The ground floor is mainly devoted to the out-patient department, and contains the dispensary, men's and women's waiting rooms, surgeons' consulting-room, operating-room, and dressing-rooms. The walls of the men's and women's waiting-rooms, which immediately adjoin the dispensary, are, like the corridors, faced with glazed brick. Light and ventilation to the whole of the apartments on the ground-floor, as well as the corridors, have been amply provided for. At the first-floor level, over a central open area, there is a flat asphalte roof. This roof contains twelve lantern lights, affording light and means of ventilation to all the apartments named. All the upper floors are intended for the occupation of the medical officers, nurses, servants, porters, and others connected with the domestic arrangements of the hospital. Amongst other apartments in the basement is the dispensers' dining-room, together with dispensary and general stores. The walls of all the staircases leading to the upper floors are faced with a dado in glazed brick, 5 ft. in height. All the floors from the basement to the top of the building are of fireproof construction. Mr. Matthew Wyatt is the architect, and Messrs. Higgs & Hill the general contractors. Messrs. Haden & Sons, of Trowbridge, supplied the boilers, warming apparatus, and all the engineering work. Mr. Barrett, of York-buildings, Adelphi, furnished the ironwork; Mr. Johnson, of Wandsworth, the lifts; and Mr. Ebner, of Clerkenwell-road, laid down the mosaic floors. Mr. W. Tookey is clerk of the works, and Mr. W. Swain the general foreman. The estimated cost of the building is 16,000*l*.

CHARGING ORDERS.

BY Section 17 of 45 Vic., c. 14, where a building is ruinous or so far dilapidated as thereby to have become and to be unfit for use or occupation, or is from neglect or otherwise in a structural condition prejudicial to the property in or the inhabitants of the neighbourhood, the Metropolitan Board of Works is empowered to issue a summons calling upon the owner and occupier of such neglected structure to show cause why the structure should not be taken down, repaired, or rebuilt, and upon the order being made, if the same is not obeyed, the Board are empowered to enter and execute the same. If the order is to take down the structure, the Board may sell the materials as they think fit. And by Section 18 of the same Act the Board may, after notice served, apply to a magistrate for an order for payment of any expenses which they have incurred in respect of dangerous or neglected structures, such order directing that until such expenses are paid no part of the land upon which such dangerous or neglected structure stands or stood shall be built upon, or that no part of such neglected structure, if repaired or rebuilt, shall be let for occupation until after payment of the Board's expenses.

A great number of orders of this character

have been and are being obtained, and, as will be seen from the above-quoted sections, the same seriously affect builders and owners of property in the metropolis. Any one may purchase a piece of land upon which one of the above orders has been obtained, and find himself liable to pay a very large amount in addition to his purchase-money, and as both builder and owner are liable to heavy penalties and imprisonment if they commence to build upon property so charged, it would be well, where there is the slightest suspicion of a charge, for both builder and owner to search the Register of Orders made, kept at the Offices of the Board, and which can be inspected without fee.

CASE UNDER THE METROPOLITAN BUILDING ACT.

TEMPORARY BUILDINGS.

This case, which came up in the Court of Appeal, before Mr. Justice Matthews and Mr. Justice Day, was an appeal from the decision of Mr. Marsham, sitting at the Woolwich Police-court, by the Metropolitan Board of Works, upon a complaint that Messrs. Anthony & Co., of Lonsdale-chambers, Chancery-lane, had erected, without the licence of the respondent, a wooden building for the purpose of advertisements, contrary to 45 Vic., c. 14, sec. 13. The complaint, after several arguments, was finally decided on the 3rd day of May, 1884, when the learned magistrate dismissed the summons on the ground that the building having been completed six months before the taking out of the summons, the complainants were out of time in taking their proceedings, according to Jarvis's Act, 11 & 12 Vic., c. 43, s. 11, which enacts that the complaint shall be laid within six calendar months from the time when the maker of such complaint or information respectively arose.

Against this decision the respondents appealed.

Mr. Besley and Mr. Avory appeared for the appellants, and Mr. Fox for the respondents. After hearing the arguments on behalf of the appellants that this was a continuing offence, and counsel for the respondents, the Court directed to allow the appeal, and ordered the case to go back to the magistrate with the decision of the court that the application should not have been dismissed, and that he must proceed to deal with and inflict the penalties of 5*l.* and 40s. for every day during which the default in removing the erection continued, bearing in mind the power he had in dealing with the penalties to remit same if the respondents would undertake to remove the erection.

Costs of the appeal allowed.

THE DECORATION OF THE CUPOLA OF ST. PAUL'S.

Sir,—The important question that has now to be decided is, whether the cruel injustice done to Thornhill by his dismissal, in 1718, from the Office of Works, where he had so long occupied an honourable position, is to be followed up by the erasure of his decorations, and by the annihilation of his artistic reputation? Let us be somewhat consistent. The Legislature has recently made enactments for the preservation of rude stone monuments, &c., and there exists a very active organisation in England to prevent foreigners doing what they like with their own cathedrals. Yet in the very face of, and notwithstanding, all this, it is coolly proposed to utterly efface the most important work of a distinguished artist, who has been entitled "The Father of the English School of Historic Painting." Moreover, I do not stand alone in thinking that Thornhill's designs are, in their general arrangement, far better adapted to their purpose than any others recently suggested. A writer in the "Encypædia Londoniensis" (1815), article "London," thus states the case:—

"We cannot leave this subject without expressing most earnestly our wish, which is common with that of all those who look up to the paintings of the cupola, that they may either be repaired or the subjects entirely repainted, preserving, out of respect for the original designer, the outlines of his compositions. But then we would advise the giving up of the idea of chiaroscuro. The dome is rather indifferently lighted, therefore the more glowing the colours might be and the more glaring the ornaments might blaze in burnished gold, the greater would be the effect."

The heaviness of Thornhill's monochromes is frequently condemned, but those who condemn it forget that neither Wren nor Thornhill would have willingly limited the decorations to monochrome; the introduction of colour was opposed by the Puritanical prejudices of their time, as it was subsequently, and for the same reason, when the Bishop of London rejected the offer of Sir Joshua Reynolds, West, &c., to pictorially decorate St. Paul's.

W. Cave Thomas.

STATUARY FOR BLACKFRIARS BRIDGE.

Sir,—In your issue of Nov. 29th [p. 742], Mr. Cave Thomas comments on the Blackfriars Bridge competitions.

As the recipient of a premium in the open competition, may I be permitted to add a few remarks?

The Blackfriars Bridge *fiasco* illustrates in a striking manner the relations of sculpture and patronage. Some means are certainly required to bring those with commissions to bestow into immediate relation with capable sculptors willing to execute them.

The open competition resulted in six premiums being awarded, and in the committee being able to determine the kind of work they thought most suitable for the purpose; and having decided on this point, the natural course would have been to request the winners of the premiums (and other artists, if the committee so desired) to submit further designs.

Instead of which, a fresh competition was arranged, and the winners of the premiums were excluded.

The instructions in the open competition were extremely vague, and consequently the sketches were slight, as with the uncertainty of a large competition before them, sculptors cannot afford the time and expense necessary to make highly finished works; while the limited competition was much more favourable to the artists, as they knew exactly the subjects the committee desired, and possessed other advantages.

Why in a second competition the winners of premiums in the first were expressly shut out, and refused permission to submit any further designs on any condition whatever, I am at a loss to understand. As a natural result the affair collapsed on being submitted to the Court of Common Council.

The entire proceeding is most unsatisfactory, and points to the urgent necessity of some such body as suggested by Mr. Cave Thomas (at least as far as sculpture is concerned) capable of advising in these matters.

An Association of Sculptors, comprising the entire body, and having degrees such as member, associate, and lesser grades, that could meet and discuss the position of sculpture, and use their combined influence in advancing it, would not only be employed in the healthy occupation of looking at matters as they affect the *art*, instead of the *individual*; but would do much to raise it to its proper place in public estimation, and gain for it the position of dignity it should undoubtedly occupy.

W. S. Frith.

THE MERSEY TUNNEL.

GEOLOGICAL PREVISION.

Sir,—All who are interested in the success of a great engineering work will be pleased to hear that the Mersey Tunnel is now completed under the river and arched in. This is cause for congratulation all round, and especially to Liverpool people, for it has been an undertaking of great boldness both in conception and execution.

The work has been pushed on with great spirit, and much praise is due in the first place to the skill of the engineers, Messrs. Brunlees & Fox; and secondly to the energy of Mr. Waddle, the contractor; and to their efficient assistants, the resident engineer, Mr. Irvine, and the contractor's engineer, Mr. Prentice.

Having ventured a prediction as regards the strata likely to be met with, in a paper "On the Buried Valley of the Mersey," published in the "Proceedings of the Liverpool Geological Society" as far back as 1872, I think it is well, now the work is secure beyond a doubt, to call attention to the actual facts. In my paper of 1872 I stated the grounds of my belief that, notwithstanding the prevailing opinion that a shelf of rock extends across from Seacombe Point to Prince's Dock, it would be found that there exists in the bed of the river between Liverpool and Birkenhead a "deep rock channel or gully filled with drift.

In a paper on the "Drift Beds of the North-West of England," Part II. (Quarterly Journal of the Geological Society, May, 1883), I restated this view; and in the columns of the *Builder*, February 4th, 1882, I further called attention to and insisted upon it. I may also add that my views were published in the face of two sections in my possession at the time (1872) which professed to give the actual surface configuration of the rocky bed of the river as ascertained by borings for the projected tunnels; one on the site of that now carried out, the other higher up the river, between the south end of the city and New Ferry, both of which showed a thick covering of rock over the tunnels the whole way across the river.

The actual facts are these. The tunnel works have shown that the rocky bed of the river at its deepest point is, some 300 yards from the Liverpool side, deeply buried in drift. About 100 yards of this gully or pre-glacial bed has been intersected by the upper part of the tunnel. Before this part was finally arched up I had permission from the engineers to inspect it, which I did in company with my friend Mr. Frank Archer, of the firm of Messrs. Gill & Archer, solicitors to the company, who have done so much to insure the success of the undertaking. Mr. Archer, having a good knowledge of geology, has always felt the greatest interest in the geological aspects of the tunnel works. We found the upper part of the tunnel section was in stiff, hard, boulder clay, resting, excepting in one place where there was a thin patch of yellow sand, upon the hard surface of the homogeneous triassic rock. There was no doubt of the nature of the strata, the clay was of the true glacial-marine type, and numerous boulders of granite, trappean rocks, and greywacke were strewn about,—specimens of these are now in Mr. Archer's possession. All that I saw were rounded, and not striated, having the character usually possessed by the lower beds of the low-level boulder clay as described in the account of the Atlantic Dock excavations.*

Very strong timbering had to be resorted to to support the roof of the tunnel, which was, however, the driest in this of any length. In fact, given the gully, it could not possibly have been filled with better material for tunnelling through had it been made to order.

I think I have now stated enough for the present to show that geology is of considerable service to engineering. The fact that the hard rock surface was swept clean and bare, the hard boulder clay resting directly upon it, shows that this was the veritable bed and outlet of the river; for in most sections we find much broken or disintegrated rock between the true rock and the boulder-clay.

At the present moment further borings are being made in the upper reaches of the river, so I shall reserve a discussion of the levels and further aspects of this exceedingly interesting geological problem until they are completed.

T. Mellard Reade, F.G.S.

Liverpool, Dec. 5, 1884.

ARCHITECTS' COMMISSIONS.

Sir,—The proceedings at the meeting of the St. Pancras Board of Guardians, on the 27th ult., reported in your last issue [p. 774], is, it appears to me, an instance of the absurdity of architects making a uniform charge of 5 per cent. for all kinds of work. If it had not been for this irrational mode of payment, I doubt very much if Mr. Commissioner Kerr would have questioned for a moment the employment of an architect. I have long been convinced that the payment of architects by commission is not considered by people in general a fair mode of payment, and that this apparently small matter is the cause of a great deal of work, which should by right go to the architect, being taken out of his hands.

C. F. M.

*** We are very much in sympathy with our correspondent's views, but have not felt that we were quite called upon to attack a system which the profession have so generally adopted and seemed satisfied with.

SEWAGE DISPOSAL.

Sir,—If you have space in your valuable paper for the following, it may be of interest, in consideration of the above often troublesome problem, to many of our inland towns and villages.

Could not the formation of trunk sewers, with a satisfactory outlet at the coast, be promoted by our Government, and made to pass through large centres of our population, to which all available districts should be made to radiate, with charges *pro ratâ* for cost and maintenance?

Our own town in particular, with an effective trunk from the east coast, would be equal to the wants and collection of the different towns and villages on the route, and might embrace the town of Bradford in its capacity.

Joseph Bentley.

Leeds, Dec. 5, 1884.

* "Drift-beds of the North-West of England."

WESTMINSTER HALL.

SIR,—I have just had the honour of seeing my humble name in your columns [p. 752, *ante*]. You speak of my "foolish letter" to the *Times*, and say further that I am a "self-constituted authority."

I have nothing to say in mitigation of your first adjective. The foolishness of my letter is a matter of opinion. It is not my place to estimate the value of my own opinion. For this reason I did not reply to Mr. Pearson's letter in the *Times*. He sheltered himself behind an anonymous journalist in order to attack me, and I naturally concluded that if his case was so bad as to need this kind of advocacy, I might safely leave it to some one else to reply, the more so as Mr. Pearson made no attempt to reply to my facts,—I do not say "arguments,"—as it requires some one who knows as much, or nearly as much, as Mr. Pearson, to make arguments out of such facts.

But when you use the second adjective or adverb, "self-constituted," you fall into a certain amount of error, which, no doubt, with the usual "justice without mercy" which I have received at your hands, you will allow me to clear up. In this case, certainly, I was not a "self-constituted authority." Very unwillingly on my part, I was the spokesman of two antiquarian committees. I am unable, for reasons into which it is not needful to enter here, to offer to give evidence before Mr. Shaw-Lefevre's Committee; and, in default, I undertook to write the letter which you characterise as "foolish." As that letter contains the result of the researches of many non-restoring antiquaries, I do not greatly distress myself at the reception it has met with.

W. J. LOFTIE.

PROVINCIAL NEWS.

Newcastle-on-Tyne.—New premises for the Young Men's Christian Association were opened by Earl Cairns on Dec. 5. The architects have converted the interior of what was St. James's Congregational Chapel into a convenient set of apartments. The whole of the interior was, in the first place, cleared out (retaining only the chapel floor and ceiling), and an entirely new floor was constructed across the building at the level of the former galleries, thus obtaining a large hall, the full area of the interior, and capable of seating about 450 persons. The contractors were as follow:—For the structural works, Mr. Sidney Millard; for the plumbing, steam-heating, and ventilating, Messrs. Walker & Emley; for the decorative work, Messrs. J. Richardson & Co., for whom the stained glass was executed by Mr. G. J. Baguley. The architects from whose plans and under whose superintendence the whole has been carried out, are Messrs. S. Oswald & Son, of Newcastle.

Sidmouth.—A handsome staircase in oak and walnut is about to be erected at Primley, Sidmouth, the residence of Mr. R. Taylor. It is in three flights; the newels carried to the ceiling on the ground-floor, in order to form a parclose, and on the landing supporting the beam carrying the roof. The main portions are oak; the brackets between the balusters, the panels of the spandrel, and doors being walnut. The work is being carried out by Messrs. Goff & Co., of Exeter, from the designs of Mr. Octavius Ralling, architect, Exeter.

Marlow.—The new waterworks at Marlow, Bucks, have been opened. The company, at the commencement of the year, purchased land from Major Carson, near the Old Chalk Pit (where a well has been bored). The building comprises an engine-room and boiler-room, with the necessary appurtenances. The shaft of the well is 6 ft. 6 in. in diameter, and 90 ft. deep. The boring at the bottom is 9 in. in diameter, and 260 ft. from the surface, and from this boring an ample supply of very fine water is obtainable. The reservoir at the top of the hill will hold 160,000 gallons. The engine for pumping is 12-h.p. nominal, indicating up to 30-h.p., with 24-in. stroke. The pumps have two throws and 21-in. stroke, and are 9 in. in diameter. Three miles of mains, 55 lb. pressure to the square inch, are already laid, and it is hoped before long another three miles will be added. The engineer was Mr. Jabez Church, M.I.C.E., of Westminster, and the contractor for the well was Mr. R. B. Paten, of St. Albans. The rest of the work has been carried out by Messrs. H. Young & Co., of Pimlico. The cost of the works has been about 6,500*l.*

Lancaster.—An extensive range of conservatories is being added by Mr. James Williamson to his residence, Ryelands, Lancaster. A glazed corridor, skirting portions of two sides of the house, connects the sitting-rooms with the large conservatory, which is 40 ft. long by 18 ft. wide, covered by a curved roof with lantern. This conservatory is lofty, and is intended for large plants. Leading from this is a smaller and lower conservatory, 31 ft. by 23 ft., roofed by a double-span roof, hipped at the ends, for ordinary greenhouse plants. A porch entrance, carried up as a tower, with Mansard roof, forms a connecting-link between the two conservatories and a storehouse, of less height, 32 ft. by 14 ft. The range has been designed by Messrs. Paley & Austin, architects, of Lancaster, and has been carried out under their supervision by Messrs. Messenger & Co., horticultural builders, of Loughborough, all the latest improvements in ventilating gearing having been introduced. The heating is on the low-pressure system.

Ludlow.—At the meeting of the Rural Sanitary Authority of the Ludlow Union, last week, the question was discussed of the payment of the railway fares to and from Ludlow of the candidates for the post of engineer and surveyor in connexion with the water-supply and sewerage of Craven Arms. The four candidates selected to appear before the Board were Mr. Parker, city surveyor, Hereford; Mr. G. J. Stead, Southport; Mr. F. S. Stooke, Shrewsbury; and Mr. W. Wyatt, Ellesmere, and it was decided to allow them second-class fares. There were eighty-three applications for the appointment.

Leamington Spa.—The spirit which has moved Bath and Harrogate to an appreciation of their own merits as English Spas has at length extended itself to the pretty Midland town of Leamington. The Corporation, which has in the past been too unmindful of the interests committed to its charge, has recently been strengthened by an accession of professional men, who are determined to restore Leamington to popular favour. On Monday last, with only one dissentient, the Corporation decided to embark in a very considerable expenditure on the improvement and modernising of the Pump Room and Baths, and so endeavour to obtain a share of the tide of fashion which has already begun to turn in favour of our own English watering-places.

CHURCH BUILDING NEWS.

Highgate.—The committee for erecting the Church of St. Augustine, Highgate, have placed the work in the hands of Mr. Sedding, of 447, Oxford-street.

Upleatham.—Upleatham Church, Yorkshire, is about to be re-seated and restored, from designs prepared by Messrs. Clark & Moscrop, architects, Darlington.

Islington.—The church of St. Peter, Islington, erected about forty years ago by Sir Charles Barry, has lately undergone considerable repairs and alterations internally. The floor, which was attacked by dry rot, has been removed, and the entire church has been re-floored. The eastern portions of the north and south galleries have been removed, and also the children's galleries in the transepts and west end. The old lead lights have been replaced with new windows in geometrical designs, glazed with tinted glass. The works have been carried out under the direction of Mr. J. Douglass Mathews, of Dowgate-hill, by Messrs. Dove Bros., Islington. The cost, including lighting and warming, will be about 1,500*l.*; but, as the funds in hand do not reach this sum, the external work has to be postponed.

Netley.—A new church is shortly to be built at Netley, upon a site (given by Colonel Crichton) overlooking the ruined abbey. The designs are by Mr. J. D. Sedding.

Pallion.—The whole of the walls and roof of the chancel of Pallion Church, Sunderland, have now been completed in colour decoration to harmonise with the portions done some little while since. The work consists chiefly of diapers and ornamental bands emphasising the architecture here and there, and in some delicately-traced work upon the roof-panels, which are divided by the rafters done in black and gold. The reredos has also received some little colour and ornamentation, and figures of the Evangelists have been painted in the panels. The work is from the designs of Messrs. Powell Bros., of Leeds, and has been executed under their superintendence.

Burstow (*Surrey*).—The parish church of Burstow has lately been re-opened, after very extensive repairs and re-arrangement of internal fittings. The building is a good and characteristic specimen of a Surrey church, possessing work of the twelfth, thirteenth, fifteenth, and sixteenth centuries. The chancel is of considerable length in proportion to its width, and contains, on the north side, a little Norman window and a trefoil-headed Early English one. The nave was considerably altered in the fifteenth century, retaining, however, a small Norman window, now blocked up, on north side. In the sixteenth century an aisle was added on the south side. The old nave roof has rude oak massive tie-beams, with moulded king-posts and braces, the ordinary rafters being what is called trussed construction. At the west end stands the tower, of a construction by no means uncommon in this part of Surrey, *i.e.*, there are no stone walls, as the tower from the ground-line is formed of most massive oak timbers, framed with oak stud-work, covered externally with weather-boarding, crowned by an oak shingle spire. The piers on each side of the chancel arch, and on the nave side, contain niches. The windows to the north nave and south aisle walls are of Perpendicular character. The rich octagonal font is of the same period. Several portions of the walls, some of the buttresses, and upper part of chancel arch, have been rebuilt. Nearly the whole of the walls had to be carefully underpinned. A new oak trussed rafter-roof has been put to the chancel in lieu of the lath-and-plaster ceiled one of same form, which was thoroughly decayed. This was also the case with the nave roof, which has been renewed in oak, save the old trusses. The south aisle roof is also entirely new, founded on the old lines. A vestry, with lean-to roof, has been added on the north side of the chancel. The modern unsightly south porch has been replaced by an open oak porch, with cusped ornamental tracery panels and barge boards. The main gables have been furnished with carved oak barge-boards and floriated crosses. Externally the roof has been covered with Broseley tiles. Proper eaves gutters and down-pipes have been supplied, as well as a sunk brick channel course round the walls, after the ground had been lowered. Entirely new windows, to replace the incongruous modern ones, have been inserted in the east and west walls of the south aisle; the other windows having been repaired where necessary, and the westernmost window on the north side of the nave restored to its original length. New oak doors with floriated hinges have been put up. A handsome moulded stone archway and glazed traceried screen, with doors, has been inserted in the west end of the nave, thus opening to view the interesting timber construction of the lower part of the tower. The modern high pews have given place to open pitch-pine benches, with oak prayer-desk and chancel seats. The communion-table has been raised on a platform, and new oak altar-rails fixed on octagonal moulded shafts. A new oak pulpit, with traceried panels, partly open, on a pedestal of red Corsehill stone, has been fixed. The font has been reset on a new platform, with ornamental oak iron-bound cover. The windows have been glazed with rolled cathedral glass, in various lead quarry patterns, mixed with clear white glass, arranged by the architect. The hot-water apparatus is by Messrs. Rosser & Russell, of London. The total cost of the works is about 1,900*l.* Mr. B. Edmund Ferrey, F.S.A., was the architect; and Mr. Alfred Guy, of Camberwell, the contractor.

Bradford-on-Avon.—Christ Church, Bradford-on-Avon, which was re-opened recently, after restoration, carried out from the designs of Mr. John Oldrid Scott, has just received a handsome addition (embraced in the original design), consisting of an ornate font cover, of carved English oak. The cover is octagon in plan, and rises to a considerable altitude. The base is boldly moulded and embattled, and from this rises the spiral canopy of graceful ogee outline, which has upon every angle richly-carved crockets. The spandrels on very cant are of flowing tracery, and these panels are each respectively broken half way up by an embattled string running right round the entire cover. On the summit is a finial of crisp foliage, carrying above it a sculptured representation of the pelican feeding her young. The work has been executed by Mr. Harry Hems, of Exeter.

London.—St. Mary's Church, Spital-square, has been re-opened, after having undergone extensive alterations and repairs under the direction of Mr. D. R. Dale, architect. The ceiling and cornice are entirely new, and the windows have received the addition of architraves. The galleries, which could not well be dispensed with, have been considerably altered to meet special requirements. The old-fashioned

pulpit and reading-desk have been replaced by furniture of better material and more artistic form.

Shilton.—The first rood erected in the diocese of Oxford since the Reformation was unveiled on the 4th inst. at Shilton Church. It stands above a new chancel-screen of Perpendicular character, all the work being in British oak. The whole has been designed by Mr. Clapton G. Rolfe, architect, of St. Michael's-chambers, Oxford. The central figure of Christ forms part of the upright portion of the cross, being all wrought out of the solid beam. The ends of the cross are foliated, and contain sculptured emblems of the four evangelists. This rood is the work of Mr. Harry Hems, of Exeter.

DISSENTING CHURCH-BUILDING NEWS.

Newcastle-on-Tyne. — The new Wesleyan chapel at Heaton, of which the memorial stones were laid on November 26th, will be situate on a commanding site at the corner of Heaton-road and Tynemouth-road. It is being built of stone, in the Early English style of Gothic architecture, from the plans and under the superintendence of Messrs. S. Oswald & Son, architects, of Newcastle-on-Tyne, whose designs were selected in competition. The contractors are Messrs. Greason & Stockdale, of Gateshead, for whom Mr. T. H. Hutchinson, of Gateshead, is executing the mason work. The clerk of works is Mr. James Grant. The edifice comprises a chapel capable of seating from 900 to 1,000 persons; a lecture-hall for 350; and five vestries and class-rooms. In plan, the chapel consists of a nave and side aisles, with shallow transepts. There will be galleries all round the interior, that for the organ being behind the platform in an apsidal recess. The principal front is towards Heaton-road, and comprises the lofty east gable of the chapel flanked by the gallery staircases, and terminated at the north-east angle by a tower 90 ft. high. South of the chapel the end of the lecture-hall, which is one story high, also faces Heaton-road. Internally, the nave and aisles will be divided by timber arches, with traceried spandrels, carried on metal columns.

Cheltenham.—The memorial stones of a new Wesleyan Chapel were laid at Winchcombe, near Cheltenham, on Wednesday, the 3rd inst. The chapel, when completed, will provide sitting accommodation for 350 persons. The design is Early English. The central feature in the front elevation will be a four-light window, with traceried and cusped head, and in the gable over it a quatrefoil cut, sunk, and perforated Bath stone panel. The dressings are of Bath stone; the main walls will be of Cleeve-hill stone; and the roofs are to be covered with blue slates. The internal fittings are to be of varnished pitch pine. The roof will be open-timbered to about two-thirds of the height. A gallery is to be erected at the front end of the chapel only. The total cost, when completed, will be about 1,200*l.* Mr. Herbert J. Jones, of Bridge-street, Bristol, is the architect; and Mr. Geo. Essex, of Swindon-road, Cheltenham, is the contractor.

Hull.—The restoration of Albion Church, Hull, has been completed, and the edifice was reopened for public worship on the 30th ult. The building, which was erected in 1842, at a cost of about 8,000*l.*, to accommodate 1,600 persons, is on plan a parallelogram, 110 ft. in length and 62 ft. in breadth. The principal front, which is executed in Harehill stone, represents a Grecian-Doric hexaprostyle temple, of bold proportions, the diameter of the columns being 4 ft. 6 in. The alterations effected have been carried out without materially changing the original construction of the interior. In the new arrangement of the pewing to the body of the church the three original aisles have been retained for about a distance of 35 ft. from the entrance lobbies. At this distance is a cross aisle connecting them, and at which the centre aisle terminates. It was the wish of the Church Committee to entirely dispense with the centre aisle, but as, in the opinion of the architect, to have done so would have been to remove what is beyond doubt a leading feature in the original design, the present arrangement was suggested as a compromise. From the cross aisle before mentioned the side aisles converge to the Communion dais, around which is a semi-circular aisle of good width, and from which four smaller aisles radiate to the seats under the side galleries. New pulpit gaslights and other gasfittings have been supplied by Messrs. George Clark & Sons, brassfounders, of Hull. The old low-pressure warming apparatus has been removed, and Messrs. King & Co., of Hull, have been entrusted with the heating of the building on the high-pressure system. The plans for the restoration were prepared by Mr. W. H. Bingley, under whose supervision the alterations have been made.

The Student's Column.

DOMICAL ROOFS.

THIS name is applied to roofs which cover a circular, elliptical, or polygonal area, and is a very ancient method of roofing. In the domical roofs of former times the material used for the covering was either brick or stone, as in that over the Pantheon at Rome, which has a span of 142 ft., and the hemispherical dome of St. Sophia at Constantinople, having a span of 110 ft. The inner surface of the dome of the Pantheon is hemispherical, and divided into deeply-recessed panels or *caissons*, by means of vertical and horizontal ribs. This dome was built of great solidity, being 4 ft. thick at the thinnest part near the summit, and increasing to 15 ft. at the springing; it forms the roof of a circular building, of which the walls are about 70 ft. in height. The Temple of Minerva Medica at Rome was covered with a dome of similar construction to that of the Pantheon, the diameter being 80 ft.

The thickness given to the dome of the Pantheon involves a great waste of material, and we find that the domes of Constantinople are much lighter. The dome of Sta. Sophia covers a square building, or, rather, it rests upon four arches built at right angles to each other and supported on four corner piers. The angles between the springing of the arches and that of the dome are cut off by curved surfaces called *pendentives*, which act as *corbels*, and form a uniform circular base for the dome to rest upon. The contour of the dome is nearly a hemisphere on the inside, and its thickness is about 2 ft. for about three-fourths of the distance from the crown; but at the springing the thickness is greatly increased. The dome is elevated 130 ft. from the ground.

The domical roof has been very generally used for dwelling-houses in the South of Italy, Turkey, and many Asiatic countries. Such a covering can be constructed of two or three courses of tiles bedded in cement, with a rendering of cement on the outside to render it weather-proof.

The domes built in India about the sixteenth century were often of great thickness, that of the Gol Goornuz at Beejapore being 10 ft. thick. It is nearly hemispherical, and erected over a building 135 ft. square. A description of it will be found in the "Transactions of the Royal Institute of British Architects" for 1854.

In the Middle Ages we have in Europe the domes of Florence and of St. Peter at Rome, with a span of 139 ft., built of brick and surmounted with a heavy lantern, the former being octagonal on plan and having a pointed arch for its section, and the latter being nearly hemispherical. These domes differ from most of the Eastern ones in being elevated on a lofty *drum* so as to form an important architectural feature when viewed externally; and, as they support the weight of a heavy lantern placed on their summit, the strength of the dome has to be proportionally increased. They are built with vertical ribs having a solid mass of brickwork filled in between them. To prevent outward thrust upon the walls of the supporting drum domes of this form are generally secured with iron belts placed round them near the springing. In a hemispherical dome of uniform thickness the greatest outward thrust is about 20° from the base, and it is at this part that the belt should be placed; but in a pointed dome the belt may be rather lower down.

The Pantheon at Paris is surmounted by a panelled dome of stone, nearly 80 ft. in diameter, the thickness of the ribs being 2 ft. 2 in. at the base, and decreasing by one-half at the top. This dome, however, does not carry the weight of the stone lantern at the top, the real support of which is a brick cone built on the inside of the stone dome.

In modern times buildings of this form have been generally roofed in by a structure of timber and iron, and it is to these materials that we shall now confine our attention. St. Paul's Cathedral in London has a dome which is a combination of brick and timber, the inner dome being of brick and hemispherical, surrounded by a brick cone, on which latter rests an elaborate framework of timber to receive the covering of the outer dome. A series of curved wooden ribs form the contour of the outer dome, with purlins fixed between them, to which the boarding for the lead covering is nailed. The curved ribs are supported by horizontal timbers, whose inner ends rest on stone corbels built into the brick cone, and are strongly braced and strutted.

Philibert Delorme, the architect of the Tuileries who flourished in the sixteenth century, introduced a method of constructed domical roofs with ribs of timber by placing side by side two or more thicknesses of planking, as before described for the curved ribs of semicircular roofs. The feet of the ribs are let into a curb of timber which goes all round the top of the wall; the planks are in short lengths of 3 ft. or 4 ft., cut to the required curve, and are bolted together side by side. The ribs are placed about 2 ft. apart at the base, and meet together at the vertex. For a dome of 60 ft. span the ribs should be of two thicknesses of 2 in. planks 13 in. deep, and for 100 ft. span two thicknesses of 3 in. planks, or three of 2 in. A dome of this kind was erected over the Halle au Blé (corn-market) at Paris about a century ago, with a clear span of 130 ft. In this case the ribs were made of three thicknesses of 3 in. planks 9 ft. long and 13 in. deep, bolted together in such a manner as to break joint. After standing for twenty years it was destroyed by fire.

The outer dome of the Church of Sta. Salute at Venice, which is 80 ft. external diameter, has ninety-six curved ribs 5½ in. thick, each in four thicknesses 8½ in. deep, which are held in by a strong iron hoop placed round them at some distance above the springing. The lantern which surmounts this dome is carried on an internal dome of brick.

In domes of this construction, the purlins which receive the covering are placed horizontally all round the ribs, and notched upon their backs, to give them stiffness; similar purlins being notched on the inside to receive the plastering of the ceiling.

Pyramidal roofs over square or oblong buildings are constructed in the manner described above, either with straight or curved rafters, which form the external angles or *hips*. The hip rafters meet either in a point or ridge, or else abut on a rectangular frame, as in curb roofs; purlins are laid horizontally across the main ribs or rafters to receive the common rafters and the roof covering. Timber spires are formed in this way, either square, round, or polygonal on plan. Many of the spires of Sir C. Wren's City churches are constructed in this manner.

The domical roofs of modern times are generally constructed of iron, that which covers the elliptical area of the Albert Hall, at Kensington, being formed of thirty half-trusses on the bowstring principle, as shown by fig. 5 of the former article on "Iron Roofs" (p. 777, *ante*). These trusses are united in the middle to a central iron curb, elliptical on plan, and having the full depth of the trusses. The boom of each truss is of T section, 11 in. wide by 9 in. deep, and the tie-beam is of similar form and dimensions; the half-truss is divided into seven parts by radiating struts of cross-section, between which is diagonal cross-bracing of round iron. The heel of each truss is rounded, and rests in a cast-iron shoe, which is securely fixed to a wrought-iron wall plate, 3 ft. 8 in. wide, made in the form of an I girder, and laid all round the top of the outer wall of the building. The depth of the trusses at the centre is 17 ft. 6 in., and the span varies from 185 ft. to 219 ft. Between the trusses are seven rows of purlins, six of which have a depth of 5 ft. 11 in., and the lowest just above the springing is 2 ft. 3 in. deep. They are formed of lattice bracing and struts, riveted to top and bottom booms. A description of this roof will be found in the "Transactions of the Royal Institute of British Architects" for 1872.

The usual modern method of forming domes is by fixing curved ribs of iron, springing from the top of a wall and uniting in the centre, or in a central curb, as in the reading-room of the British Museum, which has a span of 140 ft., and is 106 ft. high. The ribs in this case are of wrought iron, twenty in number, and unite at

the top to an iron ring, 40 ft. in diameter, which forms the opening for a skylight.

The roof erected over the Vienna Exhibition building in 1873 is a dome of conical form, circular on plan. The span is 360 ft., and the cone springs at a height of 80 ft. from the ground, resting on thirty cast-iron stanchions placed 36 ft. apart. The cone is inclined 30 deg. to the horizontal, and is truncated at the top, leaving a circular opening 96 ft. in diameter. It is constructed of wrought-iron plates, 1 in. thick, riveted together, bent to the curve, and tapering towards the top. Vertical ribs of lattice work are fixed on the outside, running from the top of each column to the summit, with four rows of purlins fixed between the ribs.

On the top of this cone a drum is erected 34 ft. in height and 100 ft. in diameter, which is surmounted by another truncated iron cone, having an opening at the top 24 ft. in diameter, on which stands a second drum, 28 ft. high, carrying a hemispherical dome and lantern. Mr. J. Scott Russell, the designer of this structure, claims for it a maximum of strength combined with a minimum of weight and material, the greatest amount of strength being provided where there is the heaviest strain, and the least strength where the strain is lightest, so that there is no waste of material or strength; every part of the structure combining with the rest for their common support, and each part not only performing its own particular duty, but also assisting the others where necessary in the performance of theirs.

Domes of wrought-iron plates might be constructed of spherical forms, but the expense would be greater than in the conical form, as the plates would have to be curved vertically as well as horizontally; they would also require to be of greater strength, as the resistance to crushing would be much less in a curved plate than in a straight one.

Mr. Scott Russell's account of the Vienna dome will be found in the "Transactions of the Royal Institute of British Architects" for 1874.

Books.

A Treatise on Earthy and other Minerals and Mining. By D. C. DAVIES, F.G.S. London: Crosby Lockwood & Co. 1884.

MR. DAVIES is already favourably known as the author of several useful books on mining subjects. His last treatise on earthy and other minerals is intended as a companion volume to his work on "Metalliferous Minerals and Mining," under the classification of earthy minerals and a number of substances of great importance in the arts and manufactures. Firstly, the useful compounds of alumina, magnesia, lime, and the various clays; secondly, what Mr. Davies terms the haloid minerals, or compounds of earths and alkalies, such as common salt, nitrate of soda, borax, alum shale, phosphate of lime, &c.; thirdly, carbon and the compounds of carbon, sulphur; and, lastly, some metallic minerals such as arsenic, antimony, and manganese. This is a wide range of subjects to cover in one volume, yet each mineral of importance is sufficiently noticed to convey some information.

It is interesting to learn that the china-clay trade of this country is of comparatively recent date, having been founded by Mr. William Cookworthy, of Plymouth, in the year 1733. In 1809 the export of this clay from Cornwall amounted to 1,757 tons, and in 1881 it had risen to 241,458 tons, besides a further quantity of 30,479 tons from Devon. China clay is derived from the decomposition and wearing down of granite rocks, and consists almost entirely of silicate of alumina. Among the haloid minerals worked in England, common salt is the most important. According to ancient records, salt was worked by the Saxon kings, and since those early days it has been continuously and increasingly worked until in 1881 the production amounted to 166,740 tons in Cheshire, and 20,891 in Ireland. In early days the trade in England was hampered by taxation long since removed. It seems strange that Mr. Davies does not refer to the great salt lagunes of Cyprus, nor to the value of the potassium salts derived from certain salt beds. Nitrate of soda and borax, also haloid minerals, are not mined in England, but largely imported.

Considerable space is devoted to the consideration of the phosphate deposits of the world, forming a very interesting chapter. The next section treats of carbon, compounds of carbon and sulphur. All carbon-containing minerals are included except coal. First comes the diamond, the most singular crystallisation of a black and opaque substance.

Although diamonds have been used by the lapidary from time immemorial, it was not till the end of the last century that Lavoisier demonstrated that the brilliant and transparent stone was composed of carbon. India was for a long time the only source of supply of diamonds, but in 1726 they were discovered in Brazil, and lately, in 1867, in South Africa. The news of the discovery was at first received with great suspicion, and in 1868 a writer in the *Geological Magazine* ends an article on the discovery in the following words:—"I can only now conclude by expressing my conviction that the whole diamond discovery in South Africa is an imposture, a bubble scheme." New discoveries are frequently thus treated by irresponsible writers who have not the knowledge of facts necessary to form a correct opinion, and very often are not capable of forming a correct judgment, even with the facts before them. The result of the discovery so far has been that in 1881 the value of the diamonds sent through the Post-office from South Africa amounted to 3,685,000*l*. We have not space to follow the author in his notices of plumbago, oil shales, and other carbonaceous minerals. The chapter devoted to metallic minerals includes manganese ores, so important to the chemical and iron trades.

The volume closes with a classified list of the mineral substances. This book contains a great deal of useful information, succinctly given. It is more an epitome than a treatise, but as such is useful for reference, especially to students. The subjects are somewhat unequally treated. There is very little said about some, and nothing at all about others. For instance, the ochres so largely used in the manufacture of paint, and meerschaum, from which tobacco-pipes are made, are not noticed.

The volume is well illustrated, which is an important feature in such a book, and greatly assists the text.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

1,636, Improved Method of Laying Bricks. H. W. Hart.

This invention is designed principally for use with the patent bond bricks devised by the patentee, in which the bricks are formed alternately with joggles and recesses on their bedding and butting surfaces, and the invention has for its object the laying of such bricks without mortar or cement. It consists in the application of a thin layer of waterproof or asphaltic mixture laid on a fibrous material. These layers are stamped out in the pattern of the brick, and are first steeped in a solution of tar cement. The joints are thus neatly and carefully laid without skilled labour, and quickly dry, even during bad weather.

2,539, Improvements in Paints. O. Fischer.

The materials are so devised as to produce a paint which is applicable as priming or body colour, but by mixture with some added material it becomes a substitute for linseed oil.

386, Improvements in Artificial Marbles, &c. Shaw Bros.

The natural operations in the formation of stone or marble are imitated. A piece of clay is rolled or beaten out on a board or slab into a bat, which is then dried in the sun or an oven until it cracks or veins. Into the fractures a slip is poured between. The slip being composed of coloured clay, minerals, &c., so as to form the shade, colour, and veins of the marble imitated. Granite or other stones are also imitated, and the articles are glazed or fired in the usual way.

132, Improvements in Ventilation. J. S. Sweet.

Between the floor and ceiling an air-tube is carried into a shaft, the centre-piece of the ceiling forming an outlet. On the shaft the ventilator is fixed. The inside of the ventilator is made in sections or tubes, which causes a strong up-current of air. Under the roof a tapered injector is fixed, so that the smaller end enters the air-shaft, while the outer is on the roof. The pressure of air will then drive out all impure air, and the ventilation will then be rapidly and effectively carried out.

APPLICATIONS FOR LETTERS PATENT.

Nov. 28.—15,662, P. E. Ayton, Improvements in Door Chains.—15,682, H. Gratrix and J. Best, an Improved Size.—15,701, S. B. Goslin and J. J. Brown, Water Waste-preventer and Flushing Apparatus.

Nov. 29.—15,726, W. D. Cliff, Constructing Glazed Brick Walls.—15,729, M. J. Adams, Ventilating Apparatus.—15,737, Securing Sign-plates to Walls, &c.—15,739, W. G. Margetts, Manufacture of Portland Cement.—15,745, E. Reese, Decoration of Chimneypieces and other Ornamental Work.—15,751, J. Howie, Improvement in Drain Traps.—15,753, J. Campbell, Improvements in Ladders.—15,755, T. Durrans, Gully Traps.—15,758, J. Bartlett, Improvements in Stencils.

Dec. 1.—15,782, W. Sanderson and T. A. Moffitt, Lock and Latch Furniture.—15,803, J. B. Robinson, Improvements in Sashes.—15,805, G. S. Buchanan, Improvements in Ventilators.

Dec. 2.—15,846, H. Benson and E H. Kent, Locks or Fastenings.—15,857, H. Gardner, Surfacing Compounds.—15,863, B. J. Mills, Extension Ladders.

Dec. 3.—15,871, W. H. Withington, Water-closets.—15,875, W. A. Leipner and C. Brotherhood, Electric Bell Pushes.—15,894, P. Quigley, Double Mitre Sawing-machine.

Dec. 4.—15,927, J. T. King, Apparatus for Closing Doors and preventing the Slamming of same.—15,928, G. Heward, Cooking and Kitchen Ranges.—15,945, J. J. Talman, Attaching the Handles of Door Locks to their Spindles.—15,954, M. Ker, Raising and Suspending Venetian Blinds.—15,955, W. H. Willett and T. C. Wakeling, Improvements in Fire-grates.—15,963, W. R. Lake, Manufacture of Bricks.—15,966, J. Shaw, Combined Level, Plumb, and Angle Indicating Tools.—15,973, W. Teague, Rock Drills.—15,976, E. R. Hollands, Open Stoves or Fireplaces.

PROVISIONAL SPECIFICATIONS ACCEPTED.

5,888, R. A. Lowe, Sash Windows.—13,668, S. Willett, Securing Door Handles on their Spindles.—14,316, R. Willis, Preparing Wood previously to Painting and Varnishing.—14,346, G. Kinnaird, sen., G. Kinnaird, jun., and J. Kinnaird, Combined Open and Close Fire-ranges.—14,393, J. Stansfield, Asphalte Pavements.—14,417, J. Ball, J. H. Rawson, and F. P. Rawson, Combined Ferrule and Bolster for Chisels and Gouges.—14,430, A. B. Joy and J. J. Lewen, Imitation Marble.—14,433, A. Putney, Wood Flooring, Ceilings, and Dados.—14,616, E. Shrimpton, Glazing Sashes, &c.—14,618, A. Parkinson, Stench Traps.—15,086, J. Inshaw, Domestic Fireplaces.—15,194, W. Gadd, Joining Lead Pipes.—15,301, L. Coppard, Hanging Sashes.—14,074, G. W. Webb, Exhaust Ventilators.—14,711, A. Mackie, Machinery for Grinding and Shaping Bricks.—15,088, E. Jones and J. J. Calcott, Cheeks for Register Stoves.—15,192, W. Russell, Improvements in Overmantels and Ornamental Frames.—15,289, J. Endean, Syphons and Cisterns for Water-waste Preventers.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

2,374, J. Mould and J. J. Mould, Improvements in Zinc Roofing.—2,687, N. Frère, Joints for Metal or other Pipes.—2,907, H. W. Hart, Manufacture of Bricks and Tiles.—3,329, G. Kay, Fixing Roof Rain-water Gutters.—9,939, W. Finch, Roofing Tiles.—13,430, P. A. Ames, Construction of Ceilings and other Parts of Buildings or Structures.—3,279, J. Heywood, Machines for Painting, Varnishing, Sizing, and Washing Laths.—3,957, A. J. Boult, Manufacture of Wood Screws.—13,284, F. George, Connexions for Lead and other Pipes.—14,241, A. M. Clark, Improved Composition Mastic.—14,511, F. Cuntz, Intermittent Flushing Apparatus.—14,521, H. Curzon, Filtering Rain-water in its Flow from Roofs to Tanks.—14,621, J. Hatfield, Manufacture of Artificial Stone.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

DECEMBER 5.	
By BAKER & SONS.	
Willesden—7, Hillside, 82 years, ground-rent 8*l*. 8s.	£585
Barking—North-street, two plots of freehold land, 3a. 0r. 23p.	765
Paradise Marsh, containing 4a. 2r. 11p.	290
Kingston—two plots of freehold land	78
Worthing—a plot of freehold land	80
DECEMBER 8.	
By — CHAMPNESS.	
Whitechapel—62, High-street, freehold	1,310
By DOWSETT & WOODS.	
Kentish Town—36, Clarence-road, 52 years, ground-rent 9*l*.	790
By C. G. CUTLER.	
Winchmore Hill—Ground-rent of 40*l*. a year, reversion in 96 years	1,125
By P. D. TUCKETT & CO.	
Kingston—Crescent-road, a plot of freehold land, 0a. 1r. 32p.	350
By TOOTELL & SONS.	
West Smithfield—59, 61, and 63, St. John-street, freehold	1,920
DECEMBER 9.	
By C. & H. WHITE.	
Clapham—Rectory Grove, house and stabling, 43 years, ground-rent 12*l*.	600
By CHADWICK & SONS.	
Chelsea—57, Lamont-road, 83 years, ground-rent 8*l*.	410
By E. & H. LUMLEY.	
Maida Vale—24 and 26, term 25 years, ground-rent 23*l*. 6s.	1,500
DECEMBER 10.	
By L. R. FOOT.	
Whitby—the reversion to one-fourth share of freehold and leasehold property yielding 40*l*. a year	130

DECEMBER 11.

By NEWBON & HARDING.

Islington—6, Cloudesley-place, 22 years, ground-rent 6*l.*	£230
Homerton—38 and 40, Sidney-road, 90 years, ground-rent 2*l.*	905
Hoxton—76, Gopsall-street, 52 years, ground-rent 5*l.* 10s.	420

By W. SCHOFIELD.

Brixton—74, Arthur-road, 79 years, ground-rent 5*l.*	3.5

By BARBER & TAYLOR.

Croydon—1 and 7, Gordon-terrace, freehold	900
Forest Gate—Atherton-road, a plot of freehold land	375

By E. STEVENSON.

Bermondsey—30, Marine-street, and a cottage, 45 years, ground-rent 3*l.* 15s.	250
432, 434, and 436, Southwark Park-road, 65 years, ground-rent 9*l.*	610
Brixton—7, Loughborough Park, 38 years, ground-rent 5*l.*	290
22–36, even, Chapel-street, 15 years, ground-rent 33*l.* 8s.	650
Walworth—34, 36, and 38, Barlow-street, 28 years, ground-rent 9*l.*	440
Bermondsey—14 and 16, Spa-road, 32 years, ground-rent 6*l.*	330
Old Kent-road—43 and 44, Bowles-road, 57 years, ground-rent 9*l.*	450
Peckham—1, Willow Brook-road, 38 years, ground-rent 3*l.*	200
95 and 97, Gordon-road, freehold	470
Old Kent-road—2 and 4, Gervase-street, freehold	495
Walworth—78, Manor-street, 66 years, ground-rent 4*l.* 10s.	320
Wandsworth-road—23 and 25, Southville and ground-rents of 24*l.* a year, term 12¾ years	275
39, Southville, and ground-rents of 10*l.* a year, term 12¾ years	225
43, Southville, 12¾ years, ground-rent 8*l.*	180
Priory-mews, stabling, and a ground-rent of 5*l.*, term 12¾ years	100
Newington-causeway—16, Union-road, 7 years, ground-rent 5*l.*	95

By FAREBROTHER, ELLIS, CLARK, & CO.

Islington—The Peacock Inn and 13, High-street, adjoining, freehold	13,000
9, High-street, freehold	3,350
Holloway—Enkell-street, ground-rent of 23*l.* 9s., reversion in 76 years	570
Hertslet-road—Ground-rent of 47*l.* 10s., reversion in 76 years	1,285
Seven Sisters-road—Ground-rent of 60*l.*, reversion in 76 years	1,550
Maylon-street—Ground-rent of 47*l.* 5s., reversion in 76 years	1,155
Grove-road—Ground-rent of 51*l.* 16s., reversion in 78 years	1,310
Maylon-street—Ground-rent of 22*l.* 1s., reversion in 76 years	570

MEETINGS.

MONDAY, DECEMBER 15.

Royal Institute of British Architects.—Mr. Lawrence Harvey on the late "Professor Semper's Theory of Architectural Ornament." 8 p.m.

Society of Arts (Cantor Lectures). — Mr. Harold B. Dixon, M.A., on "The Use of Coal Gas." III. 8 p.m.

TUESDAY, DECEMBER 16.

Institution of Civil Engineers.—Continued discussion on Steam Tramways. 8 p.m.

Statistical Society.—Mr. A. S. Jeans on "English and Foreign Labour Compared." 7·45 p.m.

WEDNESDAY, DECEMBER 17.

Society of Arts.—Mr. P. L. Simmonds on "The Present and Prospective Sources of the Timber Supplies of Great Britain." 8 p.m.

Parkes Museum of Hygiene.—Mr. Mark H. Judge on "Public and Private Responsibility in Sanitary Matters." 7·30 p.m.

British Museum. — Mr. W. St. Chad Boscawen on "Assyrian and Babylonian Antiquities." 2·30 p.m.

Royal Meteorological Society.—Three papers to be read, including one by Mr. Charles Harding on "The Diversity of Scales for Registering the Force of the Wind." 7 p.m.

The Hospitals Association.—(1) Professor Marshall, F.R.S., on "Hospital Circular Wards." (2) Mr. Keith D. Young on "The Miller Memorial Hospital."

FRIDAY, DECEMBER 19.

Architectural Association.—Mr. W. H. White on "The Ante-Chamber," to-day and yesterday, in French and English Plans." 7·30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. F. H. Hebblethwaite on "The Difference in Design of British and Foreign Locomotive Engines." 7·30 p.m.

Miscellanea.

Society of Engineers. — The thirtieth annual general meeting of the Society of Engineers was held on December 8th, in the reading-room of the Society, Victoria-street, Westminster. The chair whs occupied by Mr. Arthur Rigg, the president. The following gentlemen were balloted for and duly elected as the council and officers for the ensuing year, viz.:—As President, Mr. Charles Gandon; as Vice-Presidents, Mr. Perry F. Nursey, Mr. Henry Robinson, and Mr. A. T. Walmisley; as Ordinary Members of Council, Mr. Robert Berridge, Mr. T. H. Hovenden, Mr. A. F. Phillips, Mr. W. Schönheyder, Mr. M. Ogle Tarbotton, Mr. J. Waddington, Mr. W. Barnes Kinsey, and Mr. William Macgeorge, the two last-named gentlemen being new Members of the Council; as Honorary Secretary and Treasurer, Mr. Alfred Williams; and as Auditor, Mr. Alfred Lass.

British Museum Lectures.—Mr. Boscawen gave the second of his lectures on Assyrian and Babylonian Antiquities last Wednesday. We will give a brief report of it in our next.

A Water-Pipe Shock.—A singular occurrence, which is stated to have recently taken place at Ithaca, N.Y., illustrates the dangers attendant upon the universal introduction of electricity. As a lady was turning on the water from the faucet over the sink in her kitchen, using her right hand, her left hand being in contact with the iron lining of the sink, she was suddenly prostrated by a severe shock. Her impression was that she had been stricken with paralysis or apoplexy, but a physician who was summoned found that the inside of the thumb of the left hand had been blistered in several places. This led him to believe that she had received a strong electric shock from some source. A few minutes subsequently the lady's daughter, in drawing water from the same faucet, was similarly affected, though not so severely. The family then became convinced that the trouble existed in the water-pipe and sink. The manager of the Telephone Exchange, after a brief examination of the premises, found the secret of the trouble. The residence was connected with the Ithaca Hotel by a "dead" private telegraph wire. This wire had been crossed by the electric-light wire. The dead wire was connected with the metallic roof on the dwelling-house, which in turn was connected by a tin water-conductor with the water-pipe leading to the sink. When the dynamo machine of the electric light company was in operation the current passed over the dead wire to the tin roof, and thence to the water-pipe. It needed only the completion of the circuit by some person drawing water.—*Scientific American.*

The Foreign Iron Trade. — Business is still slow in the Belgian iron market, and prices are going down as low as the cost of production will permit. Owing to scarcity of orders, works are discharging a portion of their hands. The Belgian hoop-iron syndicate will cease to exist by the end of the year, and the result will be a depreciation of that product. England, and especially the London market, it is expected, will be benefited by this collapse; that is to say, Belgian manufacturers will throw their special articles on our markets at a ruinously low price. Values of other kinds of manufactured iron are nominally unchanged, but joists, angles, &c., are sold much below official quotations, principally to England. There is no change for the better in the French iron market. At Paris, manufactured iron is still sold at 140 fr., and in the Nord no more than 130 fr. and 135 fr. can be obtained, some large sales having even been effected at 125 fr. In the Haute-Marne, coke iron is still held at 155 fr., and mixed brands are treated at 170 fr. to 175 fr. In the German iron market the improvement of recent weeks has not been maintained. Pig-iron remains unaltered, but the prices of manufactured iron continue depressed, although orders cannot be said to be scarce. The American iron market continues in the heavy condition of the last few weeks.—*Iron.*

Liverpool Engineering Society.—The annual general meeting of this Society was held last week at the Royal Institution, Colquitt-street, Mr. R. R. Bevis, jun., president, in the chair. On the conclusion of the ordinary business and the election of officers for the ensuing year, the President delivered his retiring address. Some of the local events of engineering importance were first considered,—particularly the Mersey Tunnel and the Manchester Ship Canal. The fact was referred to that it was only in the early part of this year that a practical hope was given of the speedy realisation of the former project, and as the work is now approaching completion some of the possible changes and developments likely to follow were also remarked upon. With regard to the Manchester Canal, it was observed that even in its lately submitted form, and apart from all consideration of its ultimate commercial success, it, at all events, would have the merit of providing a large amount of work during its construction. Recent developments of ocean steam navigation were next dwelt upon. The latter portion of the address was devoted to matters more particularly relating to the Society. The President congratulated the members on its continued success.

Proposed Club-house at Streatham.—A meeting of Conservatives was held at Streatham last week, when it was resolved to build a Conservative Club-house, at a cost of about 2,500*l.*, and a committee was appointed to obtain subscriptions and confer with the architects, Messrs. Wheeler & Hollands, as to the cost of future extension, &c.

British Archæological Association.—The second meeting of the session was held on the 3rd inst., Mr. Thomas Morgan, F.S.A., in the chair. Mr. Roach Smith, F.S.A., communicated the discovery of a curious Anglo-Saxon bucket found in North Wales. It has three bronze hinges, and on the woodwork between these have been scratched mystic inscriptions. It had been deposited in the ground near an upright stone pillar, placed, apparently, to mark the spot. Dr. Woodhouse exhibited some medals relating to the troubles in France during the Reign of Terror and of the period of the Russian Alliance, of much interest. Mr. Romilly Allen, F.S.A. Scot., reported a remarkable discovery at Ilkley. During some works of enlargement of the gardens of the Rose and Crown Hotel at Ilkley, an old wall was met with by the workmen, and demolished. A large stone was noticed in the foundation, which, on being raised, was found to have sculpture and an inscription. It is a Roman sepulchral stone, having the figure of a female seated, with two long plaits of hair, one falling on each side of the face. There are four lines of inscription, the sepulchral character of which is shown by the common termination H. S. E. The stone had been used as old building material, but had evidently been removed from the cemetery of the Roman station of Olicana. The Chairman then read a paper on the results of the recent successful Congress at Tenby.

The Smithfield Club Show.—Among the machinery and implements exhibited at the Cattle Show this week there were a few exhibits of special interest to some of our readers. Samples of ensilage were in great force at the stands devoted to farm produce, and Messrs. F. W. Reynolds & Co., of Acorn Works, Blackfriars-road, showed a very interesting and instructive series of models of pit and barn silos, some with sliding roofs, and all provided with Messrs. Reynolds's appliances for compressing the silage. Mr. E. S. Hindley, of Bourton, showed in addition to his well-known combined vertical engines and boilers, a new form of portable engine, running on two wheels only, and designed specially for use in India. The St. Pancras Ironwork Company, amongst their exhibits of stable, cowhouse, and piggery fittings, showed a stall well suited for a heavy draught-horse, with ventilating ramp and safety manger fitting; also a vertical fodder-rack for cowhouses, as executed for the Duke of Bedford's model farm at Woburn. Messrs. Barrows & Stewart, of Banbury; Clayton & Shuttleworth, of Lincoln; Marshall, Sons, & Co., of Gainsborough; Davey, Paxman, & Co., Colchester; and F. Morton & Co. (Limited), of Liverpool, were amongst other well-known exhibitors.

Civil and Mechanical Engineers' Society. The opening meeting of this useful and rising Society was held at the Society's rooms, No. 7, Westminster-chambers, on the 3rd inst., when the newly-elected president, Mr. Thomas Cole, A.M.I.C.E., delivered his inaugural address, taking for his subject the progress of sanitation and of sanitary legislation during the last fifty years,—a period including the rise and growth of what may almost be termed a resolution in the matter of things sanitary, and culminating in the Public Health Act, in which is incorporated the fifteen main Acts and ten subsidiary Acts which form our sanitary legislation. Mr. Cole then pointed to several of the permissive clauses of the Public Health Act which *should be compulsory*, and alluded to the necessity of town surveyors being placed in the position of independence enjoyed by medical officers of health; and, in conclusion, pointed out the duties of private individuals and of public authorities to further diminish the decreased death-rate that has followed from the sanitation of fifty years.

Egypt and the Soudan.—We have received from Mr. Jas. Wyld, of Charing-cross, a map of considerable interest at the present moment, of "The Nile, Egypt, and the Soudan," being No. 11 of his Egyptian series. The map seems very complete, and in addition to the localities, gives heights above sea level, and telegraph lines, land and submarine.

Wood Chimney-pieces.—Messrs. Walker & Sons, of Bunhill-row, issue an illustrated catalogue of their carved wood chimney-pieces, mostly in the modern "Free Classic" style. The designs are mostly of an appropriate character, and suitable for execution in wood work. The name of the designer or designers is not given.

The Parkes Museum of Hygiene.—The ordinary general meeting of the members of the Parkes Museum was held at the Museum on Thursday, December 4th, Capt. Douglas Galton, C.B., F.R.S., in the chair. The meeting was held to consider the report of the Council for the tenth year, and to elect officers. The report set forth the work done in connexion with the museum during the past year, which had included lectures by the Council of the Sanitary Assurance Association, in addition to those arranged by the Council of the Museum. The accounts showed that there was urgent need for increased subscriptions if the museum was to be continued, for the small invested capital had had to be made use of this year to meet the current expenses. The report was adopted on the motion of the Chairman, seconded by Mr. Rogers Field, M. Inst. C.E. Mr. Mark H. Judge, A.R.I.B.A., then proposed "That the report be printed, for circulation, with a detailed statement of the financial position of the museum, and that a special meeting of the members be convened within two months to consider the same." This was seconded by Mr. E. C. Robins, F.R.I.B.A., and carried unanimously. Sir R. Lloyd Lindsay, K.C.B., M.P., Professor J. Marshall, F.R.S., and Mr. Alfred Waterhouse, A.R.A., were elected vice-presidents. Six new members of Council were elected, and the meeting closed with a vote of thanks to the Chairman, proposed by Dr. J. C. Steele, of Guy's Hospital.

New Mission Hall, Westcombe Park, East Greenwich.—This building, erected in the parish of Christ Church, East Greenwich, was opened on the 29th of November by the Bishop of Rochester. The vicar and committee found it necessary to meet the religious wants of this growing district, and so secured a site in the Coombe Farm-lane. The building provides accommodation for 400 persons, and consists of a large hall and class-room contiguous to and communicating. The latter, which holds sixty, is so planned that from nearly the whole of the floor space a view of the speakers on the platform in the large room, may be obtained, and a shutter, by Salmon, Barnes, & Co., is provided to separate the rooms when required. The plan has been so arranged that an extra class-room may be added at a future period. Adjoining the class-room is the Vestry, which is fitted with a large boiler, to be used at tea meetings, &c.; a sink is also provided with a flap top to form a table. The clergy and teachers' lavatories and water-closets are accessible both from hall and class-room. There are also separate conveniences for boys and girls at the end of the building. The floor is of Gregory's wood blocks, laid on solid concrete. The building is heated by small bore pipes. The whole work is substantial, though simple, and the total cost is 1,162*l*. The works were carried out by Mr. R. L. Wood, of Greenwich. Mr. V. Hibbins acted as clerk of the works. The architects are Messrs. Romaine-Walker & Tanner, of 19, Buckingham-street, Adelphi.

Needless Noises in London.—At the very time when a medical officer of health is, we regret to find, "putting up" local authorities to refuse permission for laying straw in the streets for the salvation of the sick who are racked on their beds of suffering by the rattling of cabs and wagons, a layman has started the excellent notion of forming a fund for the prosecution of engine-drivers, or their employers the companies, for needless whistling. A contemporary, applauding the idea, and predicting that a fund will be quickly accumulated, suggests that the area of reform should be extended, and that the incessant ringing of church-bells should be put down with an equally strong hand.—*Lancet.*

A New Cupboard Fastening has been patented by Messrs. Brendon Bros., of Callington, Cornwall. It embodies a valuable improvement on the ordinary "cupboard turn," simply by making a slot in the sunk portion of the face of the escutcheon for about one-third of its circumference. A stud attached to the knob runs in this slot, and thus prevents the blade of the fastener from falling below a horizontal line.

A Memorial Brass is about to be erected in the Parish Church of Morchard Bishop, Devon, by the parishioners, to their late rector, the Rev. J. J. Rowe, M.A., Oxon. It measures about 3 ft. by 2 ft. 3 in., and is being carried out by Messrs. William Damerel & Son, from the design of Mr. Octavius Ralling, architect, of Exeter.

International Inventions Exhibition.—The applications for space have now all been examined by Sub-Committees of the Council, and a selection has been made of the most promising. The number of applications has been so great that it has been decided to limit very strictly the admissions in those classes which may be considered to have been fully represented in the Exhibitions of the present and of the past year. The Council will, therefore, be obliged to refuse many valuable exhibits in such classes as those relating to Food, Clothing, and Building Construction. The Guarantee Fund now amounts to 48,280*l*., a sum considerably in excess of that subscribed for the Health Exhibition, or for the Fisheries. *Journal of the Society of Arts.*

Home for Female Inebriates. — The foundation-stone for the extension of these premises, which are situated at Ebenezer-terrace, Kennington, was laid on Wednesday last by Mr. Samuel Morley, M.P. The object sought to be attained by the promoters of the Institution (which, we believe, has done much useful work) is, by building a commodious steam laundry, to make this valuable institution for the reform of drunkards self-supporting. The architect is Mr. Banister Fletcher.

A Mace, executed in silver-gilt, and designed by Mr. Henry Perkin, architect (Messrs. Perkin & Bulmer, Leeds), was presented by the ladies of Harrogate to the Mayor and Corporation of that newly-incorporated borough, on Saturday afternoon.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Additions to Vestry Hall Buildings	Chelsea Vestry	100 guineas, first; 50 ,, second; 30 ,, third	Feb. 23rd	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Fittings	Central Technical Coll.	A. Waterhouse	Dec. 15th	xviii.
Engineering Work, &c.	Chelsea Guardians	A. & C. Harston	Dec. 17th	xviii.
Erection of 4 Cottages, Rushton, nr. Kettering	Midland Railway Co.	A. A. Langley	Dec. 18th	ii.
Erection of House and Stabling, Banbury	Not stated	W. E. Mills	do.	ii.
Boiler-House and Chimney-Shaft	Railway Servants' Orphanage, Derby	A. A. Langley	Dec. 22nd	ii.
Sewerage Works	Tottenham Local Board	Mr. De Pape	Dec. 23rd	ii.
Erection of Baths	Bristol Corporation	J. Thomas	do.	i.
Portland Cement	Brighton Town Council	P. C. Lockwood	do.	ii.
Erection of Boundary-Wall and Railing on Western Side of Royal Courts of Justice	Commissnrs. of Works	*Official*	Dec. 24th	ii.
Stoneware Pipes and Outfall Sewer	Tring Local Board	Thomas & Taylor	do.	xviii.
Pulling down of four Houses, and Purchase of Old Materials, Jermyn-street	St. James's Property Company		do.	xviii.
Erection of Cellars, Malt Store, &c., Canterbry	Ash & Co.	H. Stopes & Co.	Dec. 30th	ii.
Sewerage	Swansea U. S. A.	R. H. Wyrill	Dec. 31st	ii.
Engines and Boilers	Farnham Local Board	J. Lemon	Jan. 5th	ii.
Additions & Alterations to existing Buildings, and Fitting-up of Necessary Machinery	Commissionrs of Public Baths, &c., Brmndsy	G. Elkington & Son	Jan. 9th	ii.
Enlargement, and part Re-building Church of St. Mark, Bexhill, near Hastings	Building Committee	Riches & Esam	Jan. 15th	ii.
Oak Park Fencing, &c.		Thos. Clarke	Not stated	xviii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Surveyor	Skipton Local Board	Not stated	Dec. 16th	xvi.
Surveyor	Swindon New Town Local Board	180*l*.	Dec. 17th	xvi.
Chief Accountant	Sheffield Un. Gas Lght C.	Not stated	Dec. 27th	xvi.
Surveyor and Inspector of Nuisances	Cheshunt Local Board	175*l*.	Jan. 5th	xvi.

TENDERS.

For construction of about one mile of brick sewer, with manholes, sight-holes, &c., for the Kingsthorpe Sanitary Authority, Northampton. Mr. Wm. Hull, engineer to the authority. Quantities by the engineer:—

C. Harris, Shrewsbury	£2,737 10 0
H. Hickman, Northampton	1,612 14 0
R. C. Gordon, Nottingham	1,495 16 0
G. Branson & Son, Northampton	1,490 0 0
G. Chapman, Northampton	1,353 10 6
D. Cosford, Northampton	1,337 10 0
R. Finnegan, Northampton	1,335 0 0
J. S. Wingrove, Northampton	1,280 0 0
H. Martin, Northampton	1,270 0 0
G. White, Northampton	1,221 0 0
Green Bros., Northampton (accepted)	1,154 0 0

[Engineer's estimate, £1,248]

For shop front and fittings, 174, Oxford-street, for Mr. Hancock. Mr. Lewis Solomon, architect, 7, Gray's Inn-square:—

Yardley & Sons	£439 0 0
Drew & Cadman	428 0 0
Sage & Co. (accepted)	396 0 0

For works in the formation of a circus at Covent Garden Theatre. Mr. Frank Matcham, architect, Rugby Chambers, Bedford-row, W.C.:—

Patman & Fotheringham	£1,973 0 0
Roach	1,320 0 0
Shoolbred & Co.	1,249 0 0

For the erection of a shop and residence, Union-street, Aldershot, for Mr. T. Fountain. Mr. S. Friend, architect, Grosvenor-road:—

W. Garland	£497 0 0
J. Cranston	495 10 0
W. J. Snuggs	488 10 0
J. Hughes	480 0 0
G. Kemp	435 0 0
J. Batchelor	404 0 0
J. Seabright (accepted)	397 0 0

All of Aldershot.

For the erection of residence, Hemdean-hill, Caversham, Oxon, for Mr. C. H. Havell. Messrs. Brown & Albury, architects:—

Geo. Wernham (accepted)	£1,400 0 0

For new billiard-room at Balmore, Caversham, Oxon, for General Radcliffe Messrs. Brown & Albury, architects:—

Geo. Wernham (accepted)	£750 0 0

For the erection of new billiard-room, &c., Reading, at the Wheatsheaf Hotel, Blagrave-street, for Mr. John Gosling. Messrs. Brown & Albury, architects:—

Strong Bros.	£886 0 0
W. H. Simonds	839 0 0
W. Woodroffe	797 0 0
H. & A. Lewis (accepted)	755 0 0

For alterations and forming billiard-room, at the Vine, Reading, for Mr. John North. Messrs. Brown & Albury, architects:—

Geo. Wernham	£256 0 0
Patience & White	245 10 0
C. Brown	245 0 0
W. Woodroffe	245 0 0
H. & A. Lewis (accepted)	229 16 0

For the erection of business premises, 22, Minster-street, Reading, for Mr. J. B. Day. Messrs. Brown & Albury, architects:—

J. Sims (accepted)	£925 0 0

For fitting up club-room at the Cross Keys, Reading, for Mr. C. P. Shadbolt. Messrs. Brown & Albury, architects:—

Geo. Wernham (accepted)	£156 10 0

For alterations to Surrey House, Collingwood, Surrey, for Mr. H. G. Poulter. Messrs. Brown & Albury, architects:—

George Latter, Camberley	£700 0 0

For enlargement of schools, Globe-terrace, Tower Hamlets, for the London School Board. Quantities by Messrs. H. F. Northcroft, Low, & Neighbour. Mr. E. R. Robson, architect:—

Kearley	£8,414	0	0
Goodman	8,375	0	0
Perry & Co.	8,268	0	0
Brass	8,230	0	0
Wall Bros.	8,160	0	0
Kirk & Randall	7,947	0	0
Jerrard	7,899	0	0
Pritchard	7,898	0	0
Smith & Son	7,897	0	0
H. L. Holloway	7,888	0	0
Shurmur	7,866	0	0
Howell & Son	7,838	0	0
Bangs & Co.	7,820	0	0
Stimpson & Co.	7,795	0	0
Grover	7,776	0	0
Wm. Oldrey	7,768	0	0
Croaker	7,730	0	0
Cox	7,714	0	0
Jackson & Todd	7,695	0	0
W. Johnson	7,684	0	0
Atherton & Latta	7,542	0	0
C. Wall	7,210	0	0

For shop and dwelling-house, No. 14, Bridge-street, Exeter, for Mr. J. C. Tuckwell. Messrs. Best & Commin, architects, Exeter. Quantities supplied (to contractors marked *) by Mr. T. Mullins, surveyor, Exeter:—

*Moass, Exeter	£1,100	0	0
Sharland, Exeter	1,075	0	0
*Gooding, St. Thomas	1,074	18	0
Gibbard, Exeter	1,066	0	0
Styles, Exeter	1,050	0	0
Sanford, Exeter	1,038	10	0
*Cummins, Exeter	1,000	0	0
*Holmes, Alphington	995	0	0
*Gibson, Exeter (accepted)	890	0	0

For fixing a steam boiler and fittings and for other work in connexion with the same, at the schools, Mitcham, for the Guardians of the Poor of the Holborn Union. Mr. H. Saxon Snell & Son, architects:—

W. J. Fraser & Co.	£295	10	0
Wm. Bamford	256	0	0
Frazer & Frazer	248	0	0
May Bros.	235	0	0

For the erection of shops in the forecourts of houses known as Woodland Villas, Woodland-road, Greenwich, for Mr. John Dyer. Mr. John Rowland, architect, Charleton:—

Hayward & Son	£945	0	0
George Lee	889	14	0
Thos. A. Hollis	889	10	0
Holloway Bros.	889	0	0
John Blow & Son	837	0	0
Edwin Blow	820	0	0

For the paving (with scoriæ blocks), flagging, draining, &c., of a number of streets within the district of the South Stockton Local Board. Mr. S. E. Thorrold, C.E., surveyor:—

Robinson, Stockton	£1,956	5	10
John Dixon, Eaglescliffe	1,948	14	10
Thos. Heatley, Stockton	1,883	12	8
Richd. Jones, Stockton	1,881	13	1
Thos. Hunt, Thornaby (accepted)	1,833	17	3

For alterations to the King's Head, 128, Commercial-road East, for Messrs. Gerlach & Cox. Mr. R. A. Lewcock, architect, 88, Bishopsgate-street Within:—

Toms	£987	0	0
Marr	959	0	0
Jackson & Todd	949	0	0
Shurmur	936	0	0
Oldis Bros.	890	0	0

For air-tight cases and fittings for new show-room, for Messrs. James Deakin & Sons, Sheffield:—

Fredk. Sage & Co., London (accepted)	£301	12	6

For altering the old Court House, Bridgwater, to convert same into Municipal Offices and Free Reading-rooms and Library for the Bridgwater Town Council. Mr. G. B. Laffan, Borough Surveyor:—

Harris & Tapscott	£215	0	0
Chas. Sendell	194	0	0
R. Escott	185	0	0
Thos. Searle	163	0	0
J. H. Kitch	160	0	0
Jas. Palmer	149	0	0
H. W. Pollard (accepted)	125	0	0

For erection of a villa residence, at Bedford, for Mrs. Elgee. Mr. J. G. Galpin, architect:—

Watts & Lester (accepted)	£500	0	0

[No competition.]

For house, bakehouse, and shop, at Bedford, for Mr. A. Mann. Mr. J. G. Galpin, architect:—

Watts & Lester (accepted)	£300	0	0

[No competition.]

For alterations at Duffield, Stoke Poges, Bucks, for Mr. A. Gilliat. Messrs. Edgington & Summerbell, architects, Windsor. Quantities by the architects:—

Willis, Windsor	586	0	0
Bowyer, Slough	557	0	0
Deverill, Slough	550	0	0
Watson, Ascot	536	0	0
Hann & Co., Windsor	535	0	0
Turtle & Appleton, Wandsworth*	525	0	0

* Accepted.

For new drawing-room to High Broom House, Crowborough, Sussex, for Miss Wolfe. Mr. E. P. Loftus Brock, architect:—

Snewin	£1,475	0	0
Norman	1,450	0	0
Nightingale Bros.	1,428	0	0
Charlwood Bros.	1,265	0	0
Morris	1,200	0	0
Godly	960	0	0

Alterations at Salmon and Compasses, Dorrington-street.—Messrs. Burch & Co. write to say that the amount of their tender was 863*l.*, not 963*l.*

***Special Notice.*—Lists of tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, W.C., not later than four p.m. on Thursdays.**

PUBLISHER'S NOTICES.

Christmas Week—*The* BUILDER *for the week ending December* 27*th will be published on* **Wednesday, 24th** *inst., at the usual hour.*

Advertisements for insertion in that issue must, therefore, reach the Office before Three o'clock P.M. *on* **Tuesday, 23rd** *inst.*

ALTERATIONS IN STANDING ADVERTISEMENTS, *or* ORDERS TO DISCONTINUE SAME, *cannot be attended to if received after* 12 (*noon*), *on* **Monday, 22nd.**

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DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

SPECIAL.—ALTERATIONS in STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same, must reach the Office before TEN o'clock on WEDNESDAY mornings.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office*, 46, Catherine-street, Covent-garden, W.C. *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, PREPAID. To countries within the Postal Union, 26s. per annum. Remittances payable to DOUGLAS FOURDRINIER, Publisher No. 46, Catherine-street, W.C

TO CORRESPONDENTS.

T. M. R.—G. H. J. Florence.—H. H.—J. P. S.—T. M. R.—F. W. H.—J. D. S.—F. E.—E. F.

All statements of facts lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [ADVT.

Dry Corsham Stone.
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